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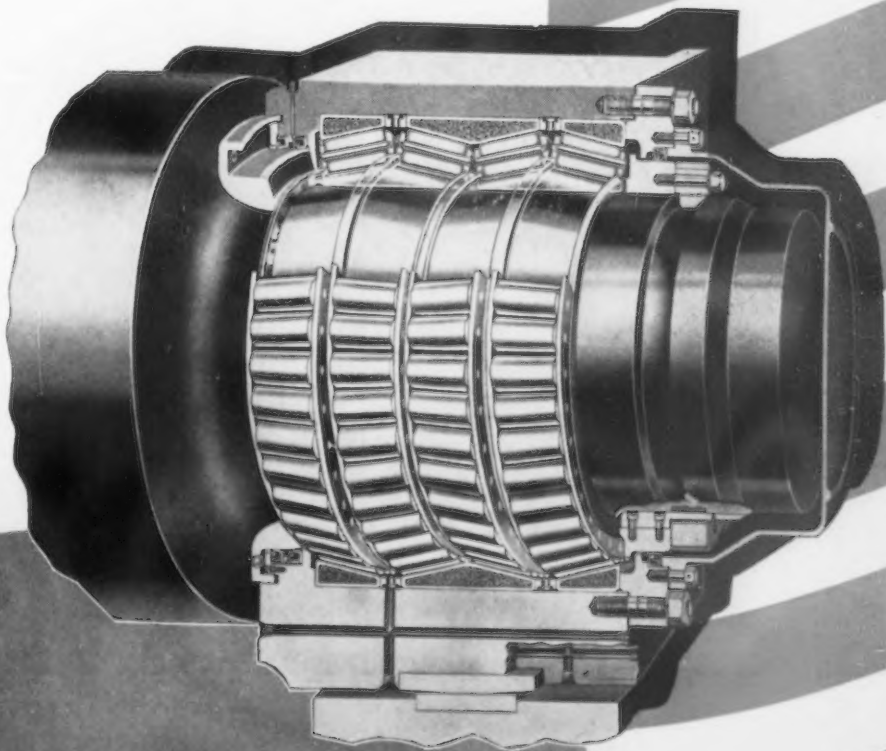
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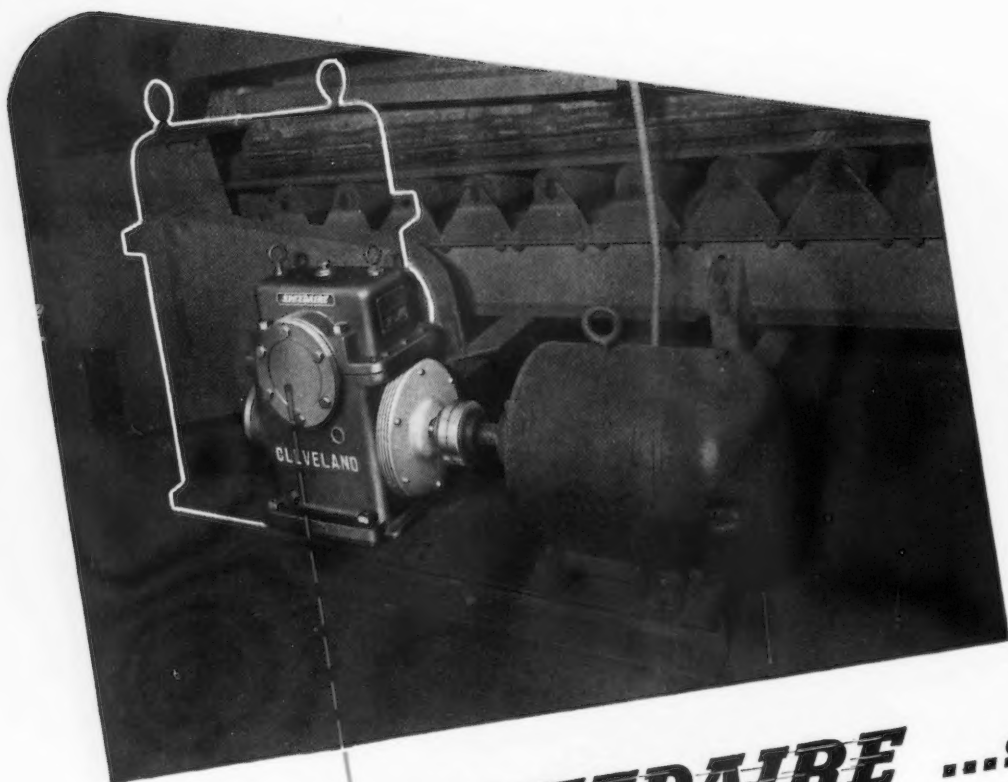
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Vol. 157, No. 20

May 16, 1946

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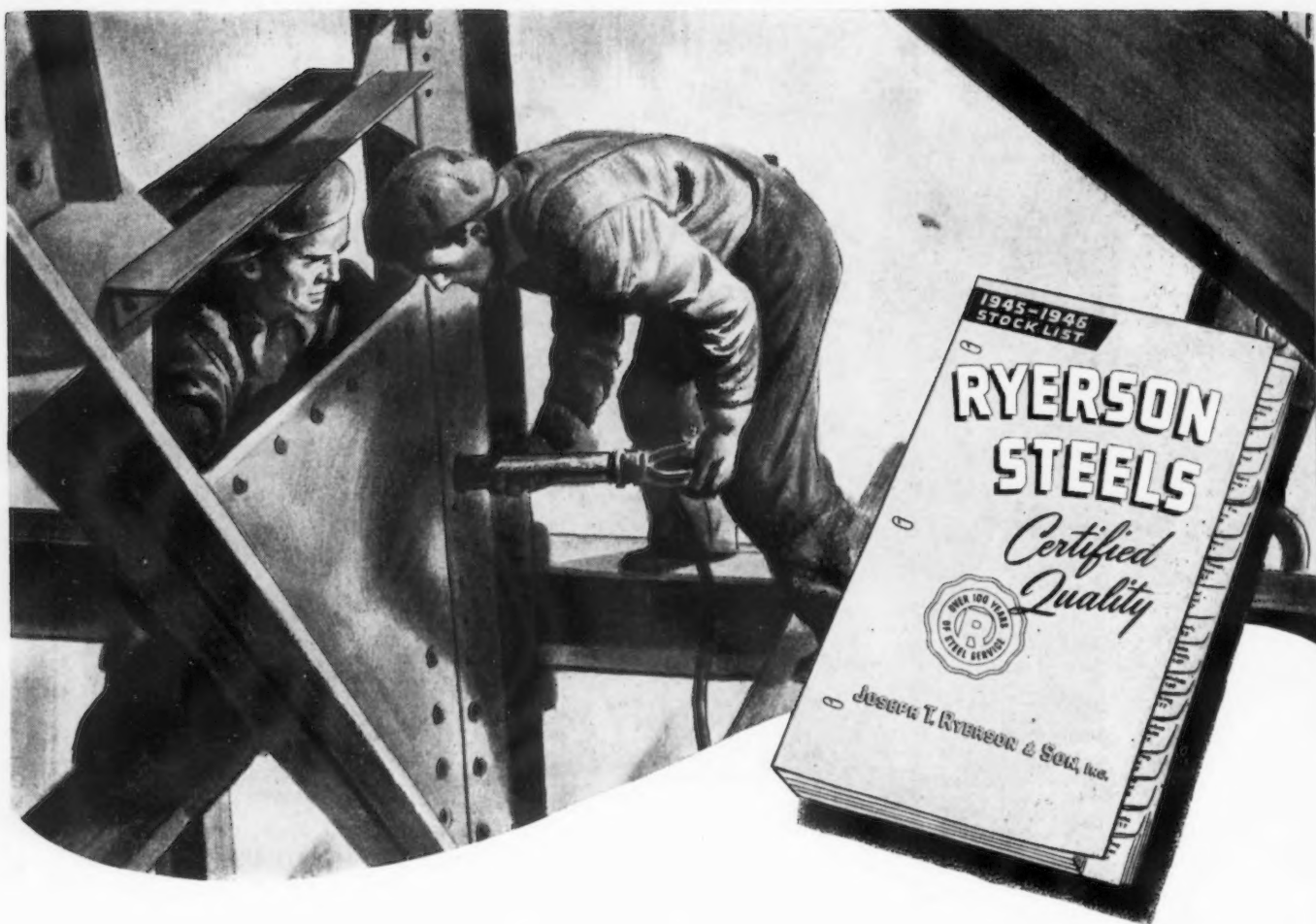
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## Ryerson Deliveries Speed Construction

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# The Elephant and the Pismire

**A** PISMIRE is an insect that is smaller than an ant but more ornery. Maybe that is because what he lacks in stature he has to make up in conceit and cussedness.

Once upon a time one of these pismires, whose ego was a million times its proper size, conceived the ambition to rule the animal kingdom. First he practiced on his fellow pismires and learned the rudiments of abuse and vindictive oratory while at the same time developed a stentorian voice. He learned the trick of making a whisper sound like thunder which is a great asset to an undersized guy who sets out to assert himself.

Next the ambitious pismire tackled the ants and found that the same technique produced results as it did later on when he progressed to the intimidation of even the lions and tigers. The secret of his success lay in the habit of animals, including people, of relying largely on oral perception. Thus when they heard the stentorian tones of the pismire, they took him at "voice value" instead of face value and never thought of turning over the stone under which he was hiding his actual insignificance.

On such Caesar-like feats did this pismire grow that eventually he tackled the elephants. Going out into the jungle, he found the path down which the bull elephant led the herd to water every evening. When the big bull who led the procession reached the point where the pismire was hiding, he was surprised to hear a thunderous command to stop.

Now the elephant being a cautious and intelligent animal naturally stopped, not because he was obeying a command but to find what it was all about. The pismire, however, took his stopping as an indication that the king of the jungle had been frightened into submission. So his next command was to kneel down and render obeisance.

In the meantime, however, the sharp eyes of the elephant had discovered the hiding place of the little pismire with the big voice. So he promptly proceeded to step on him and squash him flat.

I am told that a bull elephant is not more than 100 million times bigger than a pismire. Well, the American public is 130 million times bigger than John L. Lewis.







## RESEARCH

### That seeks and develops new and better products

• Inland metallurgists continually strive for perfection, a goal that can never be fully attained. Theirs is a constant search to obtain from the materials and the furnaces improved results in the making of Inland Steels.

This work goes on endlessly in Inland's efficient metallurgical laboratories.

We are determined to derive the utmost from all our materials and facilities. Processes and processing controls are improved as techniques are advanced . . . and new products for many uses are developed!

Research . . . consistently and successfully applied . . . is a part of Inland's service to you!

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PRINCIPAL PRODUCTS • BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • FLOOR PLATE • PILING • REINFORCED BARS • RAILS • TRACK ACCESSORIES

► Following the installation during the war of an aluminum strip mill equipped throughout with individually driven rollers, preliminary studies now are being made on the advisability of replacing the front and back tables of a steel slabbing mill with individually driven rollers.

► The first atomic pile for producing power is in the blueprint stage at the University of Chicago. Dr. Farrington Daniels, who designed the pile, sees no immediate economic competition of atomic energy with coal, but predicts its use in outlying regions with poor transportation facilities or in areas where neither coal nor water is available.

► The atom plant at Harwell has received its last truckload of machinery. All that is now needed are bars of gold, silver and platinum, some uranium and 20,000 workers.

This most secret of spots—plans of which were recently alleged to have been stolen—is so unguarded that it is practically open to visitors.

► Of the two thirds of the German merchant fleet that was turned over to the United States and Great Britain for division among 15 allied countries, Britain will receive the major share of 408,800 tons.

► The price of tin sold by the British Directorate of Non-ferrous Metals for United Kingdom export is now \$1428 per ton f.o.b. U.K. ports for common tin in ingots.

A reported disparity of \$488 per ton between London and South African tin prices is causing concern to smelters and manufacturers in South Africa. Even when cost, insurance, and freight charges are added, industry sources state that tin can still be imported in ingot form into South Africa cheaper than it can be produced.

► Firms will be able to charter round-the-world planes which will operate from Scotland's Prestwick Airport starting next month. Planes will cost \$1.40 a mile and can be chartered to New York for \$4000.

► A shortage of shipping space for automobile exports will probably mean an increase in the number delivered to the British home market. Backlogs of cars earmarked for export will mean that English motorcar manufacturers will not achieve their 50 pct export goals.

► Dutch sources predict the continuation of the international tin cartel, with increased emphasis on consumer participation. There is no indication whether "consumer participation", a polite way of saying American participation, will mean a voting voice or continued advisory representation.

► Extensive investigations by Electro Metallurgical Co. of the effect of antimony additions to 18-8 indicate that when antimony is increased beyond 1 pct the strength, ductility and toughness of cast stainless are lowered.

For wrought steels additions of up to 0.54 pct antimony have little effect on mechanical properties and weldability. Also, if the antimony content exceeds about 0.5 pct these steels exhibit hot-shortness when forged. However, 18-8 steels do benefit by antimony additions in that corrosive effects of hydrochloric, acetic and sulfuric acids are reduced.

► Although the theories regarding the occurrence of fish eyes in arc welding are probably as numerous as there are arc welders, some data have been assembled as to conditions under which they will or will not appear.

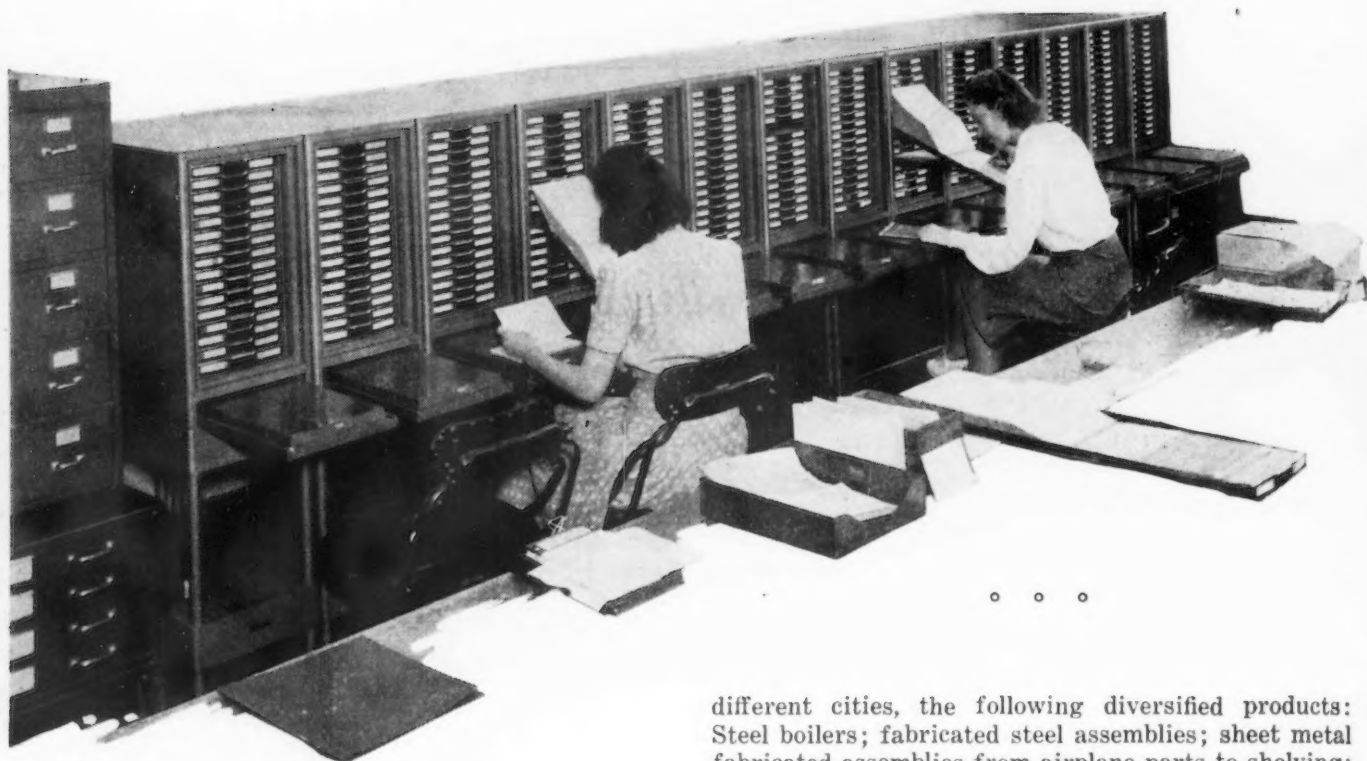
Fish eyes occur more frequently in welds made with cellulosic type electrodes than with mineral types. As manganese and silicon increase in the weld metal the number and size of fish eyes increase. Fish eyes do not form in weld metal deposited in heavily coated electrodes nor do they occur when the arc is surrounded with an equilibrium mixture of nitrogen and hydrogen.

► Although originally developed for the descaling of rolled steels, the du Pont sodium hydride process has been successfully used for removing sand and scale from gray iron castings.

Sodium hydride in a sodium hydroxide bath removes oxygen from any of the oxides formed on the metal, resulting in a chemical modification of the sand. This modification facilitates removal of sand and scale from the casting surface when the bath is followed by a washing operation.



# Putting Production Control



Typical modern safe type Kardex units which may be used to form the foundation for a wide assortment of production control systems.

**P**ROBABLY no program in a plant returns so much in actual dividends for the amount of time, labor and money expended, as a simple and sensible system of control over production. The more diversified the products and the more complex the manufacturing, the more important and valuable such a production control system becomes.

Setting up such a system so that it will really work cannot be done haphazardly. There is no one system that will do the job for every company—not even all plants and divisions within one company. Commercially available filing systems form a convenient, and even a necessary basis and start, but to get the most out of them, they will need to be modified to fit the particular plant and its products. In designing a system of production control there are five axioms: (1) Design around the product, not the filing system; (2) control everything; (3) keep the system fundamentally simple; (4) group the controls into logical departments such as stores and material, finished product, daily production; and (5) visibility of as many records as possible.

Production control at the plants of National Radiator Co. necessarily has been designed around the product, not the system. The system is fundamentally simple. The company's needs can be appreciated if it is realized that it produces at different locations, even

different cities, the following diversified products: Steel boilers; fabricated steel assemblies; sheet metal fabricated assemblies from airplane parts to shelving; special machinery; metal patterns; powdered metal for use in many applications; cast iron heating radiators and convectors; condensing and cooling sections; cast iron and steel heat exchangers; oil treating apparatus; cast iron boilers, and a variety of miscellaneous castings weighing from a few ounces to several tons.

All production control at National Radiator, however, is basically the same at all plants, varying in detail to fit individual plant and product requirements. A discussion, therefore, of the control of cast iron boiler production at the New Castle, Pa., plant will make clear the system used throughout all plants and for all products. Production control at New Castle covers everything. It begins with the issuance of purchase requisitions and carries through to the actual shipment of the product.

Boilers are made in a variety of types and sizes, and for coal firing, oil firing and gas firing. There are over 40 sizes of boilers for each type, with provisions for shipping each size and type equipped for use either as a steam or water boiler.

To facilitate control over these diversified conditions, standard shipping units have been set up. Sometimes a unit may consist of a single part, another may be a box or carton of perhaps 50 items. Some of these shipping units may be used on all boilers; others on only a few, dependent upon design or demand.

In addition to the current line of products, it is necessary that the company carry a complete line of repair parts for any National Radiator Co. boiler manufactured in the past 20 yr. This alone totals 15,000 parts, and the system handles the production control of all these purchased items, production items and shipping units.

Normally, the cast iron boiler business is quite sea-



# to Work . . .

**A pertinent discussion of a production control system that has proved practical and efficient in the plants of the National Radiator Co. is presented herewith. This system, which stresses simplification and accuracy, is applicable, with slight modifications, to a wide variety of specific plant and product needs.**

o o o

By JAMES A. COLTRIN

*Asst. to vice-president in charge of manufacturing,  
National Radiator Co., Johnstown, Pa.*

o o o

sonable, 60 pct of the year's shipments being made in about 3 months. This requires that a balanced inventory must be maintained for shipments as required. All this diversification of product and handling requirements demands a workable system of production control. In the system used there are three distinct groupings: (1) Purchase and material inventory control; (2) control of finished product inventory; and (3) control of production items.

The system is built around a Kardex system with three cards for each item (see figs. 1, 2 and 3). Fig. 1 is known as the purchase requisition card, fig. 2 the order record card, and fig. 3 the perpetual inventory card.

The first thing to be noted about fig. 1 is that since it contains all the essential information, this card has eliminated the need for separate purchase requisitions. This elimination was the first step in simplification.

The purchase requisition, card fig. 1, carries:

- (1) Complete description, giving all specifications for ordering.
- (2) Vendor's name and address.
- (3) Standard package or order quantity.
- (4) Weight.
- (5) Discount.
- (6) Terms.
- (7) Unit price.

- (8) Current inventory.
- (9) Monthly use.
- (10) Quantity to order.
- (11) Date required.
- (12) Pricing data.

Since this card actually is the purchase requisition, it is forwarded by the plant directly to the Purchasing Dept. where the order is written and the card returned to the plant.

On fig. 2, the order record card, are kept the data showing the date the requisition was sent to the Purchasing Dept., date the purchase order was issued, purchase order number, quantity on order, and the date and quantities received. The perpetual inventory card, fig. 3, gives a tabulation of every receipt and use, and shows the inventory on hand after each transaction.

The system operates in this manner: The three cards, figs. 1, 2 and 3, tell the production control story for a 1 $\frac{1}{4}$  in. radiator plug to be purchased from the

**FIG. 1—A purchase requisition card. It contains all essential information and eliminates the need for a separate purchase requisition.**

o o o

JOHNSTOWN PLANT		PURCHASE		REQUISITION		MIN. 5000		BIN NO. 714			
ITEM 1 $\frac{1}{4}$ " Radiator Plug				VENDOR Jones Manufacturing Co. Cleveland, Ohio							
				WT. 26.4 lbs per 100		F.O.B. D Cleveland					
				F.A. ON 500 lbs		TERMS 2 $\frac{1}{2}$ 10		UNIT Pcs.			
				VIA Freight		UNIT PRICE .02956					
				STD. PKG. 1000 pcs		STD. SPEC. P.-24		DWG. 5141X			
MO.	INVENTORY	QUANTITY USED	ORDER QUANTITY	DATE REQUIRED	PRICE	MO.	INVENTORY	QUANTITY USED	ORDER QUANTITY	DATE REQUIRED	PRICE
J		2340				J	12460	10000	2-15		
F		4680				F					
M		5210				M					
A		3120				A					
M		4620				M					
J		5780				J					
J		5110				J					
A		3780				A					
S		4160				S					
O	12640	5370	10000	12-1	56.20 M LESS 45-5	O					
N		4910				N					
D		4710				D					
T	1945	53690				T	1946				

At National Radiator Co. a double check has been placed on this inventory system. The minimum inventory quantity of every item is kept separated from all over that number in bins in the store room. In this way the store room clerk, who is a different individual from the the materials control clerk, can determine easily when the minimum quantity is reached. If, to fill an order, the storekeeper must take items from this segregated minimum, he removes from the bin a red tag which already is filled out showing the item. He forwards this tag directly to the plant superintendent who investigates and expedites delivery in

**FIG. 2**—An order record card that shows date requisition went to the purchasing department and the date purchase order was issued.

Mention was made earlier of the standard shipping units used at National to facilitate production and shipping control. There are many hundreds of these



units and they may consist of only one item or as many as 100 pieces. These units are described on a purchase requisition card the same as used for the rest of the control system, but of a different color. The warehouse "purchases" these complete units from the producing plant in exactly the same manner as the materials control clerk purchases items from outside vendors. These cards do not, of course, go to the purchasing department, but directly to the production control clerk of the plant.

It is the responsibility of the warehouse supervisor to requisition his units far enough in advance not only to meet his immediate expected sales demand, but also

ITEM 1 1/2" Radiator Plug					
DATE	QUAN.	BAL.	DATE	QUAN.	BAL.
10-21	1000	12640			
10-25	1000	11640			
11-4	1000	10640			
11-13	1000	9640			
11-18	1000	8640			
11-21	910	7530			
11-29	1000	6530			
12-3	500	6030			
12-8	5000	11030			
12-8	1000	10030			
12-10	210	10820			
12-20	2000	8820			
12-24	500	8320			
12-27	5000	13320			
12-28	500	12820			
ANNUAL INVENTORY					
12-31		12860			
1-7	400	12460			

FIG. 3—Perpetual inventory card showing all receipts and withdrawals from stock.

to build up a predetermined inventory to meet peak demands at certain periods.

In both the material and production control, the records deal with individual items, but when the warehouse orders shipping units from the plant, this order may be for one or fifty individual items grouped into a shipping unit. Sometimes several units may consist of virtually the same items, with only one or two changes either in the item or in the quantity. Because of this, there are some deviations from the procedure described earlier.

The production control clerk has a master breakdown sheet (fig. 4), which shows exactly what parts are necessary to make up each shipping unit. This master sheet is large enough to list the more than 100 items that may be packed in the 20 odd standard shipping containers used. Fig. 4 is a simplification of this form that makes clear the principle followed.

The primary production units are printed at the top of the sheet, fig. 4, the separate shipping units at the left-hand margin, and the individual items that make up the shipping units are carried across the top. At the top of each square beneath the individual items, and opposite the shipping units (box No. 1, etc.), is printed the number of the items that goes into each unit. When a unit does not contain one of the items, that square is blocked out.

When the production control clerk receives an order from the warehouse for shipping units he places in the first column, beneath "Quantity," the number of shipping units ordered. Then he goes across the sheet for each unit and multiplies the small printed numeral by the number of units ordered. This gives him the number of each of the items needed. These then are added at the bottom of the sheet to give the grand total of all individual items needed to make up the warehouse order.

Referring to fig. 4, the warehouse ordered a quantity 10 of box No. 1. The small printed figures showed that box No. 1 consisted of one fire door, two No. 1 panels, two 2-in. nipples, and one 30-in. poker. Therefore the control clerk wrote in the figures 10, 20, 20 and 10 in the proper squares.

Sufficient carbon copies of this are made to forward to all interested departments. In the example given, the original is retained by the production control clerk, one copy sent to the producing department, and one to the foundry and forge department. The control clerk follows through with each department until delivery is made.

Each department keeps its perpetual inventory on items in that department and the production control clerk, by going to these records, can determine im-

FIG. 4—Breakdown sheet of contents of standard shipping units for use when reordering supplies.

	Quantity	Fire Door	No. 1 Panel	No. 2 Panel	No. 3 Panel	2" Nipple	30" Poker	40" Poker
Box No. 1	10	10	20			20	10	
Box No. 2	8	8		16		32	8	
Box No. 3	12	12			24	72		12
TOTAL		30	20	16	24	124	18	12

mediately where any item is and how soon the ordered shipping units can be delivered to the warehouse.

It should be noted that throughout this system of production control there has been no unnecessary repetition of any records. The master sheet made out by the control clerk constitutes the original order, and purchase requisitions have been eliminated by the substitution of the purchase requisition card which is a part of the filing system. Elimination and simplification should be the keynote in inaugurating or revamping any system of production control.



# Antimony in 18-8 and Plain-

THE effects of a number of elements upon the physical properties and corrosion resistance of stainless steels have been studied in the past. The following is a record of the results obtained from work done recently by the research laboratories of Electro Metallurgical Co. on antimony-bearing stainless steels.\*

Several small heats of low-carbon 12, 18 and 25 pct chromium steels were made containing antimony in amounts up to about 1 pct. These steels were made in high-frequency electric induction furnaces from Armco iron, low carbon ferrochromium, ferromanganese, silicon metal, antimony metal, and carbon; then hot-worked from 2 in. square ingots into 3/4 in. and 5/8 in.

\* Covered by U. S. Patents 2,334,869 and 2,334,870.

diam bars and 1/4 in. plate, on which the tensile, impact, and corrosion tests were made.

Similar tests were made on cast and wrought 18-8 steels containing up to approximately 0.10 pct carbon and 0.15 to 2 pct antimony. A study was made of the

mechanical properties and corrosion resistance of these steels. The small heats for the investigation of 18-8 steels were also made in basic-lined high-frequency induction furnaces. The antimony was added as lumps of the pure metal after all other alloy additions had been made to the molten steel and after the heat had been finally deoxidized with small percentages of manganese and silicon. The recovery of antimony was practically 100 pct when added in this manner.

A series of 18-8 steels containing 0.5 to 2 pct antimony was cast in dry sand molds into U-shaped castings from which samples suitable for tests were obtained. Prior to testing, all samples were heated 15 min at 2010°F and air-cooled. The chemical analyses of the steels studied are listed in table I.

## Hot Workability and Machinability

Forging of the plain-chromium steels was carried out at an initial temperature of 2085° to 2120°F and finished at about 1290°F. All the steels forged satis-

TABLE I  
Composition of Stainless Steels Tested

Steel No.	Chromium, Pct	Manganese, Pct	Antimony, Pct	Molybdenum, Pct	Silicon, Pct	Carbon, Pct	Nickel, Pct
1.....	12.68	0.51	.....	.....	0.29	0.050	.....
2.....	12.54	0.40	0.27	.....	0.25	0.072	.....
3.....	12.79	0.51	0.31	.....	0.22	0.038	.....
4.....	12.86	0.51	0.65	.....	0.21	0.042	.....
5.....	12.75	0.56	0.95	.....	0.37	0.044	.....
6.....	18.53	0.55	.....	.....	0.37	0.074	.....
7.....	17.65	0.50	0.23	.....	0.36	0.052	.....
8.....	18.76	0.58	0.42	.....	0.27	0.040	.....
9.....	18.53	0.51	0.63	.....	0.24	0.056	.....
10.....	15.48	0.61	1.19	.....	0.49	0.050	.....
11 <sup>a</sup> .....	24.81	0.51	.....	.....	0.45	0.130	0.35
12.....	25.14	0.50	0.29	.....	0.35	0.074	.....
13.....	25.34	0.52	0.33	.....	0.30	0.080	.....
14.....	25.28	0.56	0.63	.....	0.19	0.088	.....
15.....	25.00	0.50	1.07	.....	0.35	0.096	.....
16.....	19.04	1.51	.....	.....	0.35	0.05	9.24
17.....	18.61	1.53	0.15	.....	0.45	0.08	8.80
18.....	18.35	0.55	0.27	.....	0.39	0.07	9.15
19.....	18.41	1.49	0.31	.....	0.35	0.08	8.91
20.....	18.39	1.50	0.37	.....	0.38	0.08	8.78
21.....	18.44	1.47	0.54	.....	0.34	0.07	8.74
22.....	18.11	0.60	0.65	.....	0.42	0.06	9.14
23.....	18.39	1.53	0.73	.....	0.40	0.06	8.93
24.....	18.39	1.53	1.03	.....	0.37	0.04	8.93
25.....	18.14	1.44	.....	.....	0.36	0.06	12.02
26.....	18.74	1.55	.....	1.03	0.45	0.06	11.58
27.....	18.55	1.57	0.33	1.02	0.43	0.05	12.03
28.....	18.79	1.54	.....	2.18	0.44	0.05	12.34
29.....	18.50	1.53	0.32	1.92	0.48	0.07	11.99
30.....	18.35	1.57	.....	3.57	0.46	0.04	12.34
31.....	18.41	1.54	0.35	3.52	0.47	0.07	11.94
32.....	18.45	1.56	.....	.....	0.44	0.05	9.13
33.....	18.50	1.62	0.51	.....	0.48	0.07	9.01
34.....	18.60	1.56	1.01	.....	0.42	0.08	9.11
35.....	18.41	1.58	1.54	.....	0.42	0.08	9.04
36.....	18.47	1.55	2.00	.....	0.43	0.07	9.04

<sup>a</sup> Contains 0.044 pct N<sub>2</sub>.

# Chromium Stainless Steels . . .

**. . . Results of extensive investigation of the effect of additions of antimony to 18-8 and plain chromium stainless steels are discussed in this article. The tests, which embraced 36 compositions of stainless steels, indicated that the effects of such additions are varied and inconsistent with respect to hot-workability, machinability, physical properties and corrosion resistance.**

factorily except the two chromium steels containing over 1 pct antimony, which cracked severely. These steels in the as-forged condition showed brittleness in machining, as did the 25 pct chromium—0.6 pct antimony steel. All of the other steels hot-worked and machined satisfactorily.

It was realized that antimony might decrease the hot-workability of the 18-8 steels and a series of forging experiments was made on steels containing 0.15 to 1 pct antimony. The data show that the steels are hot-short if the antimony content exceeds about 0.5 pct. Steels Nos. 16 and 17 (table I) forged satisfactorily at an initial temperature of 2060°F to 2100°F,

as did steels 18, 19, 20 and 21 at 2010°F to 2060°F. Steel 22 checked badly after a second heating to 2010°F; steel 23 showed no external checking but the center of the ingot split open, while steel 24 cracked badly when forged at an initial temperature of 2010° to 2060°F.

Machining tests were made to determine whether or not antimony improved the machinability of the austenitic chromium-nickel steels. The effect of this element was based upon an estimation of tool wear that occurred as the metal was turned in a lathe using a cut of 0.1 in. and a feed of 0.018 fpm. It was found that the steel without antimony machined satisfac-

**TABLE II**  
Mechanical Properties of Stainless Steels with Antimony Additions

Steel No.	Yield Strength, Psi	Tensile Strength, Psi	Elong. in 2 in., Pct	Red. of Area, Pct	Izod Impact, Ft-lb	Bhn
1 <sup>1</sup>	37,000	66,800	37.0	67.8	90.0	...
2 <sup>1</sup>	57,500	80,500	30.0	67.5	64.0	...
3 <sup>1</sup>	47,500	72,800	32.0	70.0	36.0	...
4 <sup>1</sup>	61,000	85,000	11.0	7.7	1.0	...
5 <sup>1</sup>	Sample broke at gage mark					
6 <sup>1</sup>	53,000	79,500	34.5	60.0	40.0	...
7 <sup>1</sup>	53,000	73,250	28.0	57.3	17.5	...
8 <sup>1</sup>	58,700	81,800	25.5	50.5	2.0	...
9 <sup>1</sup>	59,500	85,000	13.0	12.6	1.9	...
10 <sup>1</sup>	...	...	...	...	...	...
11 <sup>2</sup>	46,500	77,600	30.0	60.0	4.0	...
12 <sup>2</sup>	53,000	70,500	29.0	52.5	3.0	...
13 <sup>2</sup>	56,750	80,400	28.0	62.5	2.1	...
14 <sup>2</sup>	61,000	64,000	1.0	1.5	2.2	...
15 <sup>2</sup>	Sample broke outside of gage mark					
16 <sup>3</sup>	31,000	84,000	63.0	75.0	91.0	137
17 <sup>3</sup>	33,000	88,000	61.0	72.0	97.0	143
19 <sup>3</sup>	36,000	88,500	61.0	71.0	92.0	143
21 <sup>3</sup>	36,000	87,000	55.0	65.0	91.0	143
25 <sup>4</sup>	28,000	78,500	59.0	71.0	97.0	137
26 <sup>4</sup>	33,000	83,500	57.0	71.0	104.0	143
27 <sup>4</sup>	31,000	80,000	57.0	67.0	95.0	137
28 <sup>4</sup>	33,000	83,000	53.0	67.0	97.0	140
29 <sup>4</sup>	35,000	82,000	54.0	65.0	98.0	137
30 <sup>4</sup>	34,000	87,750	48.0	62.0	85.0	146
31 <sup>4</sup>	38,000	88,000	54.0	64.0	92.0	143
32 <sup>5</sup>	25,000	68,750	55.0	78.8	86.0	143
33 <sup>5</sup>	29,000	72,000	62.0	70.1	91.0	153
34 <sup>5</sup>	31,000	73,000	49.0	52.5	69.0	143
35 <sup>5</sup>	32,000	68,000	27.0	31.8	26.0	149
36 <sup>5</sup>	33,000	63,000	16.5	18.4	14.0	149

<sup>1</sup> Heat treated for 3 hr at 1380°F followed by air cool.

<sup>2</sup> Heat treated for 6 hr at 1650°F followed by air cool.

<sup>3</sup> Heat treated for 15 min at 2010°F followed by air cool.

<sup>4</sup> Heat treated for 20 min at 2010°F followed by air cool.

<sup>5</sup> Heat treated for 15 min at 2010°F followed by air cool.

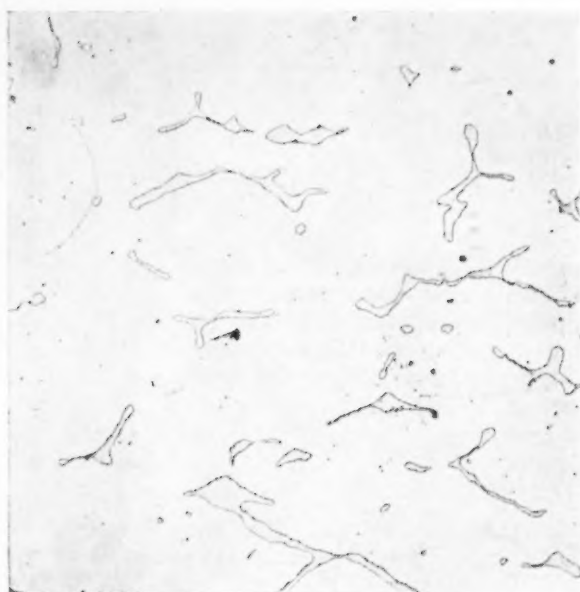


FIG. 1—Structure of steel No. 32 (table I) in the cast and annealed condition. The structure consists of austenite and ferrite. 250X

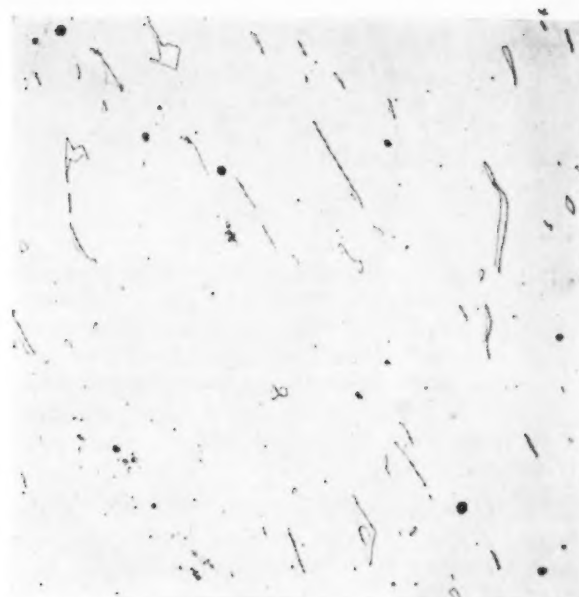


FIG. 2—Structure of steel 33 containing 0.51 pct antimony in the cast and annealed condition. The structure is the same as that of the steel without antimony (steel 32). 250X

torily at a surface speed of 60 to 90 fpm. The antimony bearing steels (0.15 to 1.0 pct) could be machined satisfactorily at a surface speed of 114 fpm, indicating that this element improves the machinability of the steel. Based upon tool wear, the indications are that the machinability of the metal increases as the antimony content is raised.

#### Physical Properties

Tensile tests and Izod impact tests were made on the steels in the annealed condition. In annealing the steels the 12 and 18 pct chromium steels were heated 3 hr at 1380°F and air-cooled; the 25 pct chromium steels were heated 6 hr at 1650°F and air-cooled.

The addition of up to 0.65 pct antimony to the an-

nealed 12 pct chromium steel causes an increase in both tensile and yield strengths with a loss of ductility and impact toughness. It was observed in considering the annealed 18 pct chromium steels that the addition of antimony has less effect on increasing the tensile and yield strength of the steel than in the case of annealed 12 pct chromium steel. A decrease in both ductility and impact toughness is observed, however, and Izod impact values decrease. In the annealed 25 pct chromium steel, a decrease in tensile strength, reduction of area, and elongation, and an increase in yield strength occur when antimony is added. The Izod impact value is also lowered slightly by the addition of antimony. In general, however, from the data in table II, it may be observed that the addition of up to 0.3 to 0.4 pct antimony to the steels may be allowed without seriously impairing their physical properties, whereas larger additions of antimony cause considerable reduction of both toughness and ductility.

Table II also summarizes the results of the mechanical tests made on castings. These data show that the strength, ductility, and toughness of the 18-8 steel are lowered when antimony is increased beyond 1 pct. The hardness remains practically unaffected. If the cast metal is required to exhibit good ductility and toughness, it is evident from these data that the antimony content should not exceed about 1.5 pct.

Further physical tests were conducted on 24 different cast 18-8 steels containing varying amounts of antimony, molybdenum and columbium. In the case of these steels in the as-cast condition, antimony tended to increase slightly the yield strength, lower the ultimate strength slightly, and lower markedly the percent elongation, reduction of area, and impact strength. However, the influence of 0.3 pct antimony in these directions was not great. When these steels were heated 1 hr at 2010°F and air-cooled, the mechanical properties were in general improved. This was particularly true of the ductility and impact strength. The steels containing 0.3 pct antimony were less affected than those with higher percentages of antimony.

The mechanical properties of wrought steels con-

TABLE III  
Corrosion Tests on Chromium Steels Containing Antimony

Steel No.	Corrosion Rate, Penetration, In. per month		
	Boiling 65 pct HNO <sub>3</sub>	Room Temp. 10 pct HCl	Room Temp. 10 pct H <sub>2</sub> SO <sub>4</sub>
1 <sup>1</sup>	0.0140	0.120	0.210
2 <sup>1</sup>	0.0231	0.036	0.142
3 <sup>1</sup>	0.0146	0.023	0.080
4 <sup>1</sup>	0.0182	0.015	0.059
5 <sup>1</sup>	0.0331	0.010	0.027
6 <sup>1</sup>	0.00140	0.250	0.440
7 <sup>1</sup>	0.00170	0.046	0.217
8 <sup>1</sup>	0.00096	0.029	0.120
9 <sup>1</sup>	0.00109	0.023	0.079
10 <sup>1</sup>	.....	0.017	0.032
11 <sup>2</sup>	0.00063	0.137	0.256
12 <sup>2</sup>	0.00196	0.0929	0.339
13 <sup>2</sup>	0.00054	0.045	0.150
14 <sup>2</sup>	0.00136	0.038	0.110
15 <sup>2</sup>	.....	.....	.....

<sup>1</sup> Heat treated for 3 hr at 1380°F followed by air cool.

<sup>2</sup> Heat treated for 6 hr at 1650°F followed by air cool.





FIG. 3—Structure of steel 34 containing 1.01 pct antimony in the cast and annealed condition. A new constituent can be seen which etches darker than the ferrite. 250X



FIG. 4—Structure of steel 36 containing 2.00 pct antimony in the cast and annealed condition. Raising the antimony content to 2 pct has increased the amount and size of the new phase. 250X

taining up to 0.54 pct antimony are also shown in table II. It is seen that the strength, ductility, toughness and hardness of the 18-8 steels are for all practical purposes unaffected by the presence of 0.15 to 0.50 pct antimony. This is in agreement with the results of the tests made on the steels in the cast condition. Tests have also shown that weldability of the 18-8 steel is not affected by the presence of antimony.

#### Corrosion Tests

It will be observed from the data in table III, that the presence of antimony in the plain-chromium steels has little influence on the corrosion of the steels in the boiling 65 pct nitric acid. The increased corrosion resistance in the oxidizing type of acid depends mainly

upon the increased chromium content and is practically unaffected by the presence of antimony.

In the 12 pct chromium steels the addition of about 0.3 pct antimony causes the corrosion rate in the 10 pct hydrochloric acid to change from 0.120 in. per month to 0.023 in. per month, as shown in table III. Larger antimony additions cause continued improvement but at a slower rate.

When the steels are exposed in a 10 pct sulfuric acid solution, the corrosion resistance continues to improve almost linearly with the amount of antimony added. As antimony is added to the 18 pct chromium steel, the most marked improvement in resistance to hydrochloric acid comes with an addition of 0.2 to 0.3 pct antimony. Further improvement in corrosion

TABLE IV  
Corrosion Tests on Wrought Samples of Plain 18-8 Steels Containing Antimony<sup>a</sup>

Steel No.	Tests <sup>b</sup>	Corrosion Rate, Penetration, In. per Month					
		65 pct HNO <sub>3</sub> , Boiling	10 pct H <sub>2</sub> SO <sub>4</sub> , Room Temp.	10 pct H <sub>2</sub> SO <sub>4</sub> , 160°F	10 pct HCl, Room Temp.	10 Pct HCl, 160°F	Acetic Acid, Boiling <sup>c</sup>
16.....	1st	0.00063	0.0119	0.225 ck 0.288	0.0071	0.64	0.0109
	2nd	0.00048	0.0121	0.191	0.0182	....	0.0111
	3rd	0.00046	0.0169	....	0.0230	....	0.0101
17.....	1st	0.00084	0.0119	0.334 ck 0.374	0.0034	0.58	0.0130
	2nd	0.00056	0.0042	....	0.0097	....	0.0099
	3rd	0.00050	0.0049	....	0.0075	....	0.0091
19.....	1st	0.00075	0.0063	0.280 ck 0.37	0.0061	0.50	0.0084
	2nd	0.00061	0.0035	0.225	0.0057	....	0.0065
	3rd	0.00060	0.0031	....	0.0065	....	* 0.0079
21.....	1st	0.00069	0.0039	0.174	0.0041	0.37	0.0083
	2nd	0.00055	0.0020	0.154	0.0040	....	0.0070
	3rd	0.00053	0.0010	....	0.0045	....	0.0054

<sup>a</sup> Heated 15 min at 2010°F and air cooled.

<sup>b</sup> 48 hr each.

<sup>c</sup> Tested in condensate of "recovered" acid (conc 96 pct).

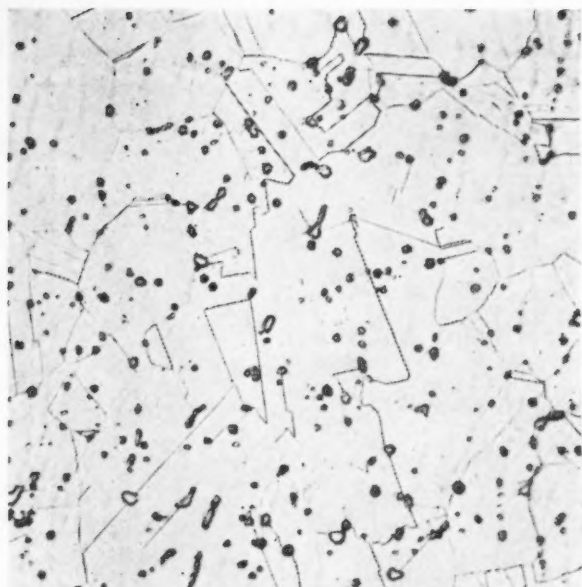


FIG. 5—Structure of metal from steel 16 in the forged and annealed condition. Considerable ferrite is present in this steel because of its low-carbon and high-chromium content. 250X

resistance results when larger amounts of antimony are used, but the improvement is small compared with the amount of antimony added.

In sulfuric acid, adding about 0.4 pct antimony materially lowers the corrosion rate. Here, also, the use of larger antimony percentages provides more corrosion resistance, but the rate of improvement is lower than in the range of 0 to 0.4 pct antimony. The corrosion resistance of the 25 pct chromium steel in both hydrochloric and sulfuric acids shows definite improvement with the addition of about 0.3 pct antimony. Continued antimony additions show only a gradual improvement in corrosion resistance.

In general, the most improvement in corrosion resistance to room temperature solutions of 10 pct hydrochloric acid and 10 pct sulfuric acid was found by adding about 0.3 to 0.4 pct antimony to the steels.

The percent improvement in corrosion resistance of plain chromium steels containing 0.4 pct antimony over the steels without antimony has been computed. The presence of antimony in the chromium steels materially improves the resistance of these steels to both hydrochloric and sulfuric acid solutions. For example, with 10 pct HCl as the corroding medium, the improvement in corrosion resistance is: 12 pct Cr—83 pct; 18 pct Cr—87 pct; 25 pct Cr—68 pct. With 10 pct H<sub>2</sub>SO<sub>4</sub> as the corroding medium, the improvement is: 12 pct Cr—65 pct; 18 pct Cr—69 pct; 25 pct Cr—45 pct.

In beginning the investigation of the corrosion resistance of the castings, tests were made in boiling 65 pct nitric acid to determine whether the resistance of the 18-8 steels to oxidizing conditions was affected by the presence of antimony. It was found that antimony in amounts up to 1.5 pct in the 18-8 steels has practically no effect on the resistance of the metal toward nitric acid. If the antimony content is increased beyond 1.5 pct, the steel is subject to slightly greater attack by the acid. The presence of even 2 pct antimony, however, did not cause the steel to become badly attacked by the nitric acid.

The resistance of the plain 18-8 steels to general

attack in 10 pct (by weight) sulfuric and hydrochloric acid solutions is shown by tests made at room temperature and at 160°F. Passivation of the metal during test was prevented by conducting the tests in a nitrogen atmosphere. The data show that antimony is effective in reducing the corrosion of cast plain 18-8 steels when exposed to sulfuric and hydrochloric acids. For example, as the antimony content is raised to 1.5 pct, there is a steady decline in corrosion rate of the metal. Beyond this amount, the corrosion rate tends to increase again.

In the cases of the molybdenum-bearing steels, the

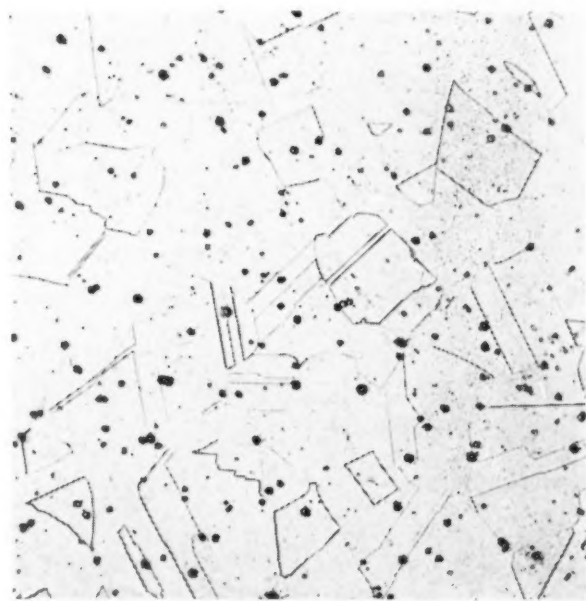


FIG. 6—Structure of metal from steel 21 containing 0.54 pct antimony in the forged and annealed condition. This steel forged satisfactorily. 250X

action of 10 pct sulfuric acid at room temperature was very slight, and the presence of small amounts of antimony in most cases further reduced the action. The improvement imparted by antimony, however, decreased as the molybdenum content increased, and with 2 pct molybdenum present, the introduction of antimony slightly increased the corrosion rate. It was further seen that the steels containing 0.75 and 1.5 pct molybdenum with 0.3 to 1 pct antimony were less resistant than the steels containing 2 pct molybdenum without antimony.

The results of tests made at 160°F show that under these conditions the presence of antimony is not beneficial. In fact, a majority of the tests strongly indicate that antimony is detrimental to the corrosion resistance of the molybdenum-bearing 18-8 steels in hot dilute sulfuric acid. The influence of antimony in the molybdenum-bearing steels is different from that observed in the plain 18-8 steels, in which it was found that small amounts of antimony improved the corrosion resistance under these conditions.

The results show that antimony is beneficial to the molybdenum-bearing steels in resisting the action of cold or hot dilute hydrochloric acid. In every case the presence of antimony improved the corrosion resistance of each of the steels containing 0.75, 1.5 and 2.0 pct molybdenum, and, on the average, the resistance was improved with increasing antimony content.

The columbium-bearing steels have inherently



greater corrosion resistance in dilute hydrochloric acid solutions than similar steels without columbium. The addition of antimony to these steels further increased their resistance to hydrochloric acid.

Corrosion tests were made in the condensate from boiling "recovered" acetic acid on a series of cast steels. The "recovered" acid was about 96 pct acetic acid, and because of the presence of a slight amount of certain impurities, the corrosive action is often somewhat greater than in the case of the chemically pure glacial acetic acid. The tests were conducted under an atmosphere of nitrogen to minimize the passivation of the samples.

The results of this test show, without exception that the presence of antimony slightly improved the corrosion resistance of each of the steels. In practically every case, the improvement was slightly greater with increasing antimony content.

Pitting tests were conducted on the plain 18-8 steels in the cast condition in 10 pct sodium chloride solu-

tions containing 5 pct and 0.5 pct ferric chloride, for periods varying between 1½ hr and 3 days. No effect of antimony in reducing pitting in these solutions was noted.

As in the case of the cast metal, corrosion tests of wrought 18-8 steels were made in nitric, sulfuric and hydrochloric acids. In addition, tests were made in boiling 96 pct acetic acid to simulate the worst conditions encountered in handling this acid. In the latter tests, a nitrogen atmosphere containing about 5 pct hydrogen was maintained over the acetic acid so as to prevent passivation. The results of all these tests are given in table IV.

It is apparent from these data that additions of 0.15 to 0.5 pct antimony are useful in reducing the corrosive effect of hydrochloric and acetic acids and sulfuric acid at room temperature without detrimentally affecting the resistance of the metal toward nitric acid. In 10 pct sulphuric acid solution at 160°F, resistance of the steels was not improved by the addition of 0.15 to 0.31 pct antimony.

Pitting tests made in 10 pct sodium chloride solutions containing 0.5 and 5 pct ferric chloride for various periods of time up to 3 days indicated that the presence of 0.15 to 0.5 pct antimony does not improve the resistance of the wrought 18-8 steel to pitting, nor does this percentage of antimony increase the pitting tendency of the 18-8 steels.

Intergranular corrosion tests were conducted on samples of sheet rolled from the steels containing 0 to 0.5 pct antimony. The samples for these tests were annealed 15 min at 2010°F, and air-cooled; then reheated 24 and 100 hr at 1200°F and air-cooled. The steels containing antimony are subject to severe intergranular attack in acidified copper sulphate solution after being held 24 and 100 hr at 1200°F.

No tests on annealed, unsensitized metal containing antimony were made in acidified copper sulphate solution, because in the annealed condition, the 18-8 steels containing antimony are as resistant to intergranular attack as 18-8 steels without antimony. That this is the case is brought out by the results of nitric acid tests shown in table IV, inasmuch as the nitric acid test is capable of revealing susceptibility to intergranular corrosion.

Intergranular corrosion tests on welds of 18-8 steels

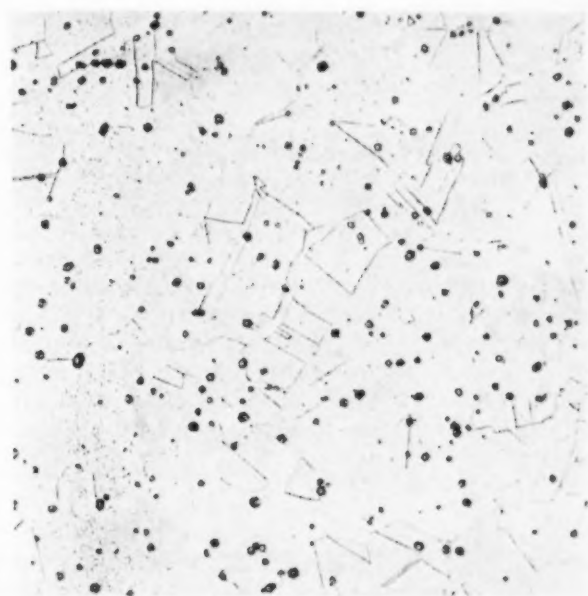


FIG. 7—Structure of metal from steel 24 containing 1.03 pct antimony in the forged and annealed condition. This steel cracked badly when forged. 250X

TABLE V  
Corrosion on Wrought Antimony-Bearing Chromium-Nickel Steels Containing Molybdenum\*

Steel No.	Inches Penetration Per Month								
	65 pct HNO <sub>3</sub> , Boiling			10 pct HCl, Room Temp.			10 pct H <sub>2</sub> SO <sub>4</sub> , Room Temp.		
	A	B	C	A	B	C	A	B	C
25	0.0007	0.0005	0.0005	0.0047	0.0017	0.0056	0.0017	0.0014	0.0021
26	0.0007	0.0005	0.0005	0.0047	0.0011	0.0013	0.0003	0.0001	0.0001
27	0.0008	0.0005	0.0005	0.0014	0.0004	0.0005	Nil	Nil	Nil
28	0.0007	0.0005	0.0005	0.0014	0.0019	0.0029	0.00004	Nil	Nil
29	0.0008	0.0006	0.0006	0.0022	0.0035	0.0007	0.00003	Nil	Nil
30	0.0011	0.0015	0.0025	0.0045	0.0012	0.0018	Nil	Nil	Nil
31	0.0011	0.0011	0.0012	0.0029	0.0008	0.0009	Nil	Nil	Nil

\* Samples held 20 min at 2010° F and air cooled.  
A 1st 48-hr period.  
B 2nd 48-hr period.  
C 3rd 48-hr period.

containing antimony were not made in acidified copper sulphate solution, but similar tests were made in boiling 65 pct nitric acid solution. The results indicate that antimony does not prevent intergranular corrosion.

Table V shows the results of boiling 65 pct nitric acid tests on wrought antimony-bearing chromium-nickel steels containing molybdenum. Here, again, it is noticed that the antimony does not influence the corrosion resistance in boiling nitric acid and that table V indicates that antimony greatly improves the resistance to 10 pct sulfuric acid and 10 pct hydrochloric acid. Table V also brings out the point that the steels containing 1 pct molybdenum with 0.33 pct antimony are equally as resistant to the corrosive action of 10 pct hydrochloric acid at room temperature as the 2 pct and 3.5 pct molybdenum steels without the antimony addition.

#### Microstructure

Microscopic examination of several of the alloys failed to show the presence of antimony as a distinguishable constituent even when 1.19 pct was recorded by chemical analysis. Hence, within the percentages in-

volved, antimony probably exists in the annealed 12 to 25 pct chromium steels in solid solution with iron and chromium. Most of the literature on the iron-antimony system shows an appreciable solubility of antimony in alpha-iron, approximately 7 pct at 930°F. The improvement in corrosion resistance in hydrochloric and sulfuric acids caused by the presence of antimony is probably due to an ability to stabilize the protective oxide film that forms, and the rapid drop in toughness and ductility also noted in these steels must be the result of some submicroscopic effect.

Tentative interpretation of the metallographic evidence indicates that the solubility of antimony is between 0.5 and 1 pct in 18-8 steels in the cast and annealed condition. The ferrite-forming tendencies of this element are very weak. When antimony is added in excess of the solubility limit, a new phase forms which in the cast structure appears to be an intermetallic compound. This phase is not present at the grain boundaries but is distributed at random in the austenite, indicating that it is relatively insoluble. After hot-working, the structure contains numerous small particles that are difficult to identify. Photomicrographs illustrating typical structures are shown in figs. 1 to 7.

## Injection Molding of Rubber Parts

**P**RODUCTION molding of both natural and synthetic rubber has been made possible by the introduction of a high speed, fully automatic machine known as the H-P-M Turbojector. Produced by the Hydraulic Press Mfg. Co., Mount Gilead, Ohio, the machine injects rubber into a hydraulically clamped mold by means of a motor driven screw, and the machine is furnished as a complete, self-contained unit.

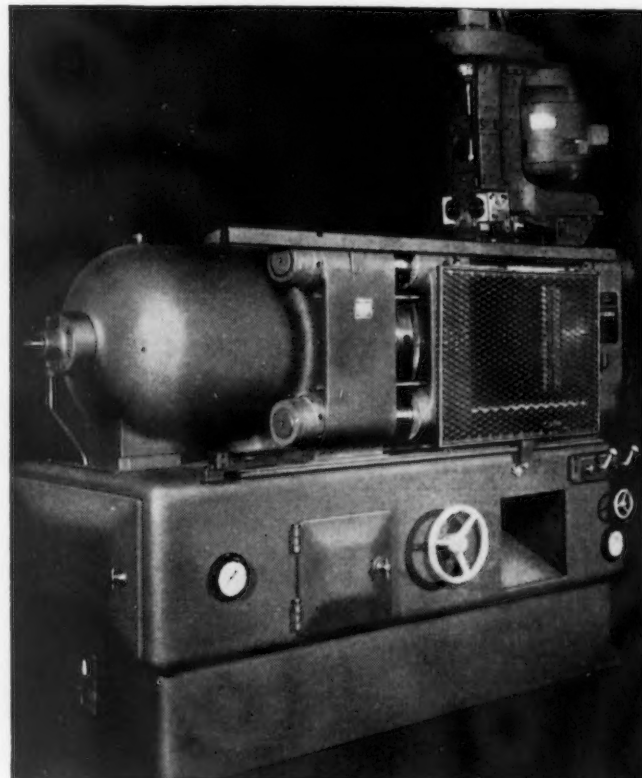
Maximum nozzle contact pressure during injection is approximately 6000 lb, permitting injection pressures as high as 18,000 psi on the material to be molded. The entire injection unit is pivoted on the stationary mold clamp platen and is hydraulically tilted, thus permitting the nozzle to engage the mold only during injection. To facilitate changing of molds, the injection head can be hydraulically tilted clear of the mold space. An unusual feature of the machine is its large capacity. Experimentally it has molded up to 8 lb of rubber per shot.

Actual production results are said to have proven that rubber parts molded by this method have superior physical properties to those molded with conventional compression methods, and production costs have been greatly reduced. Preforms have been eliminated, and curing time has been reduced, in some cases as much as 93 pct. Due to the elimination of flash, finishing operations have also been reduced to a minimum.

Parts on which this machine has been used on a production basis include ring gaskets molded without flash, in perfect symmetrical form, and with greatly improved tensile strength; automobile motor mountings molded with better adhesion of the rubber to the metal plates than could be obtained by any previous method; and heavy rubber bushings.

The driving mechanism of the injection unit consists of a 10 hp, four speed, electric motor and train of gears, directly connected to the injection screw. The rubber, in strip, pellets, ribbon, or rod form, is fed into the injection cylinder by the feed screw. As

the rubber advances, the feed screw meshes with a set of specially designed, free running baffle gears which act as pressure locks. The action of the screw and baffle gears forces the rubber into the nozzle. The frictional heat produced in the injection chamber raises the temperature of the rubber as high as 300°F. Additional heat is provided at the nozzle by employing an electrical resistance band heater. This preheating accounts for the rapid curing cycle obtainable with the new machine.





# Removing Sand And Scale From Gray Iron Castings

**S**UCCESSFUL use of the DuPont sodium hydride descaling process<sup>1</sup> for removing sand and scale from gray iron oil pump bodies and parts is reported by a large midwestern plant. Fig. 1 is a section of a typical casting treated by this process. The DuPont process employs a sodium hydroxide bath in which sodium hydride is present as a reducing agent. This combination acts to remove oxygen from any of the oxides formed on the metal being descaled or desanded, resulting in a chemical modification of the sand. This modification facilitates removal of sand and scale from the surface of the castings when the sodium hydride bath is followed by a washing operation. Most of the

<sup>1</sup> Application of the sodium hydride process to the descaling of rolled steels, including carbon, alloy and stainless types, was described in THE IRON AGE, Nov. 8, 1945, p. 58.

scale and sand in its reduced form remains on the metal when it is removed from the sodium hydride bath, but are then subsequently expelled by quenching the hot work in a water bath at room temperature.

The installation used by the oil pump manufacturers utilizes an Ajax-Hultgren salt bath furnace, which features immersed electrode heating. The capacity of this installation, shown in fig. 2, is approximately 1250 lb per hr, and the time cycle is 15 min. Both the capacity and time cycles are, of course, dependent upon the specific type and size of casting being handled.

The sodium hydride bath treatment consists of the following steps:

(1) The work is first immersed in the bath of molten caustic soda which contains a small percentage of sodium hydride. The temperature is held to within  $\pm 5^\circ\text{F}$ , of  $700^\circ\text{F}$  at all times, due to the vigorous stirring action caused within the bath by electromagnetic forces which, in turn, are created by the patented grouping and design of the closely-spaced electrodes. This bath loosens any sand, scale or foreign material adhering to the surface of the castings or forgings. The sodium hydride is produced by the chemical reaction of sodium and hydrogen by means of a generator within the caustic soda bath itself.

(2) The work is next immersed in a room temperature water quench. This removes the loosened material and any caustic which might have been picked up in the reducing bath.

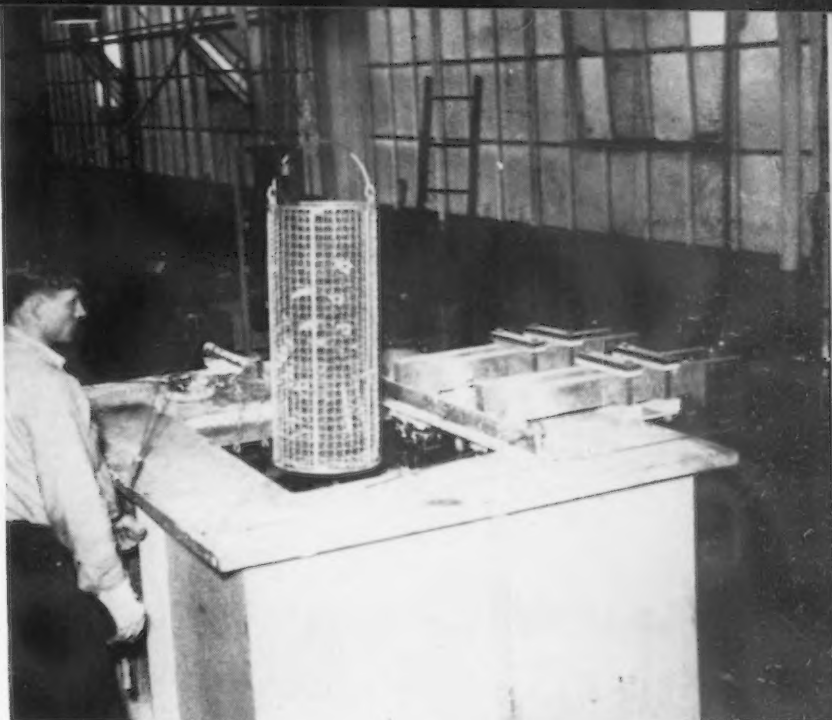


FIG. 2—Ajax salt bath furnace used for removing scale and sand from oil pump bodies and parts. The bath is maintained at  $700^\circ\text{F}$  by two pairs of closely spaced immersed electrodes.

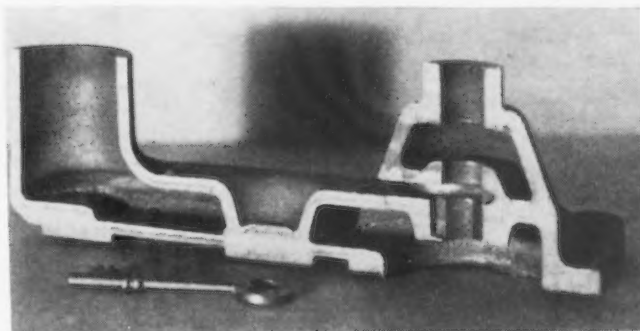


FIG. 1—Section of a typical gray iron casting which has been descaled and desanded by the sodium hydride process.

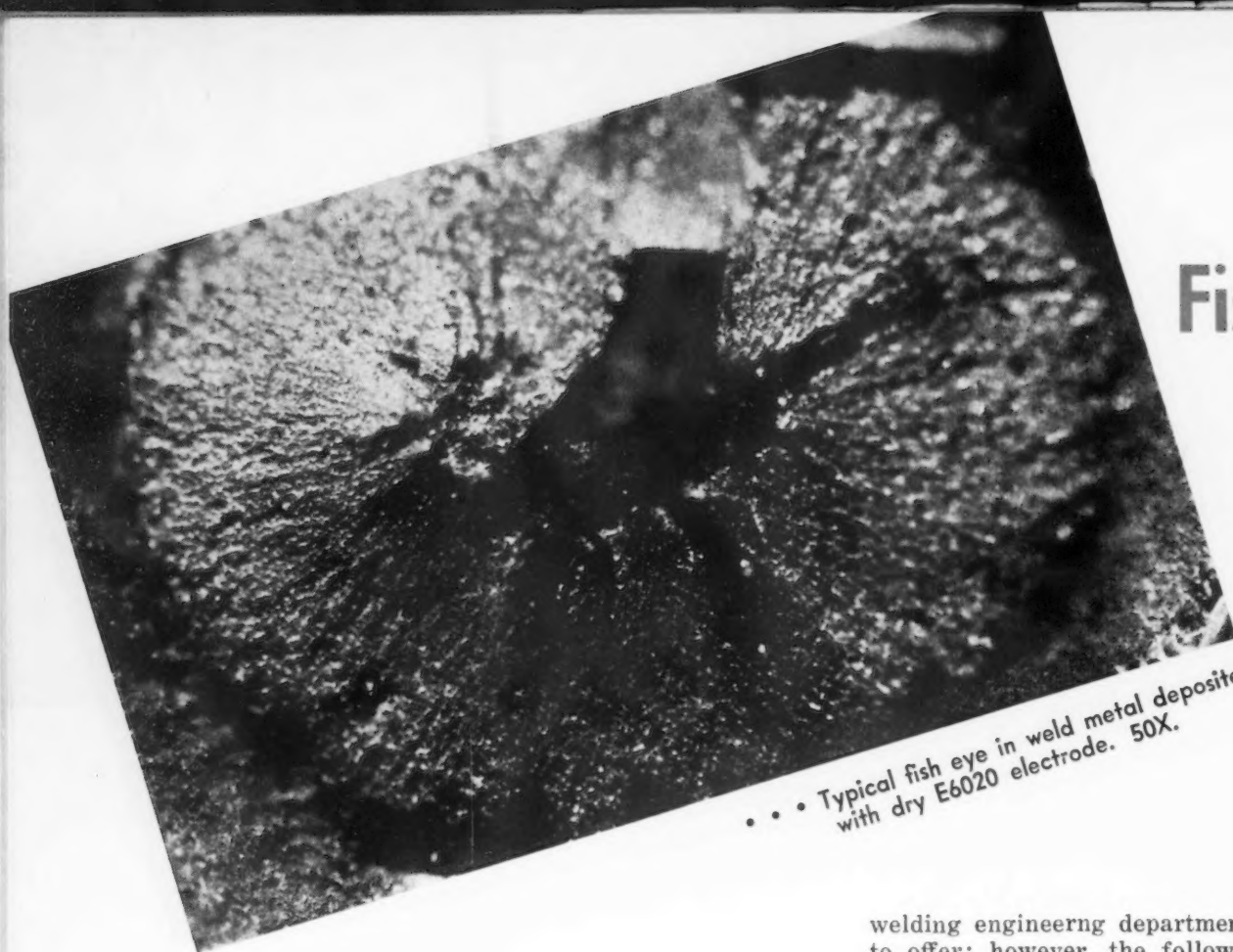
(3) Another water rinse at room temperature prepares the work for an acid dip.

(4) The work is then placed in dilute sulfuric acid for no more than 1 min. This removes any iron particles reduced from iron oxide which might still be adhering to the surface of the metal. This operation may be omitted if desired, as very little cleaning is accomplished by it.

(5) The final step is a neutralizing and corrosion-retarding bath, operating at  $200^\circ\text{F}$ . This is made up of weak sodium cyanide, 0.2 oz of NaCN per gal, which serves to neutralize any acid remaining on the surfaces of the work and at the same time providing protection against corrosive action.

It is reported that material can remain in the reducing bath for hours without causing any injurious effect upon the base metal of the work. The same is true of the fixtures or baskets used for immersing the work. They will last indefinitely, unless damaged by mechanical means, and need not be made of alloy steel. Due to automatic temperature control in both the reducing bath and the neutralizing and corrosion-retarding bath, skilled labor is not required for operating the setup.

# Fish Eyes



• • • Typical fish eye in weld metal deposited with dry E6020 electrode. 50X.

**M**OST manual arc welding operators, and certainly all welding engineers have observed the phenomenon of fish eyes, sometimes called cat's eyes, in arc weld metal. Approximately seven major theories, some of them contradictory, have been advanced regarding the causes of this, but of these, two are outstanding. One theory is that the occurrence of fish eyes is due to dissolved hydrogen in the steel, and so-called hydrogen embrittlement. The other holds that a fish eye is a combination of ductile and brittle fractures in weld metal deposited by organic-covered electrodes with stress concentration around the inclusion due possibly to shrinkage stresses.

It has been fairly well established, however, that fish eyes are observed not only in arc weld metal, but also in standard rolled steel, and only after failure has actually occurred in a tensile test or after tensile failure has occurred in service. They eventually disappear on aging, but can be removed by an an-

<sup>1</sup> See "Fish Eyes in Steel Welds Caused by Hydrogen," *Metal Progress*, 1942, 42, 209-212.

nealing process. Their presence raises the tensile strength and yield point of steel or weld metal with a consequent lowering of ductility. Some type of nucleus is generally present in the center of a fish eye, but they cannot be detected by X ray, gamma ray, or other type of nondestructive investigation. No fish eyes have been reported to date as occurring in atomic hydrogen welds, and there is no detectable difference between the chemical composition and microstructure of the fish eye and the parent metal.

At Calship, the author has been in the position of having observed this phenomenon repeatedly and under various conditions, due to the availability and extensive use of a laboratory in connection with the

welding engineering department. He has no theory to offer; however, the following is a summary of findings based on factual scientific evidence:

Fish eyes do not occur in weld metal deposited by heavily coated electrodes where the moisture content is of the following order or higher:

AWS Class E6010	8 pct by wt.
AWS Class E6012	4 pct by wt.
AWS Class E6020	Occurs oftener in dry rod but no limit determined.

When weave beads are used, fish eyes occur less frequently, but this is due to the puddling of the weld metal and the consequent reduced cooling rate. They do not occur where the joint is preheated appreciably. Metallurgically, photomicrographs of the structure below a fish eye frequently show pearlite banding, and they occur less often in a coarse grain structure than in one of fine grain.

The hardness of the metal in the fish eye itself, after it is ground down flush, varies in no special pattern from 76 Rb to 89 Rb. This depends on grain distortion. Fish eyes seem to oxidize about 30 pct faster than the other metal when a sample is exposed to normal room atmosphere. They occur oftener in welds made with cellulosic type electrodes than with mineral types, but do not appear at all if the arc is surrounded with an equilibrium mixture of nitrogen and hydrogen. As manganese and silicon increase in the weld metal, the number and size of fish eyes increases, and ordinarily they do not occur in weld metal containing less than 0.36 pct Mn, or less than 0.07 pct Si. The manganese and silicon in the weld metal containing fish eyes is usually in the form of a tightly bonded compound on which it is difficult to make a fine chemical determination.

All other things being equal, weld metal deposited by ac contains fewer fish eyes than that deposited with dc, but polarity does not appear to affect their formation, that is, they occur just as frequently on straight as on reverse polarity. They occur in butt welds regardless of the direction of loading, i.e., transverse or longitudinal tensile, but it is of in-



# in Arc Welds

By J. B. ARTHUR  
Testing Engineer, California Shipbuilding Corp.,  
Terminal Island, Calif.

Effect of Moisture Content on Physical Properties

Moisture Content Coating pct by wt.	Number Fish Eyes	Chemical Composition Of Weld Metal		Physical Properties of Weld Metal			
		Mn	Si	Yield Point	Ultimate Strength	Pct Elongation in 2 in.	Pct Reduced Area
AWS Class E6010 Electrodes							
0.250	4	0.79	0.50	50,300	64,450	24	43 <sup>1</sup> / <sub>2</sub>
2.750	5	0.33	0.15	51,800	61,300	28 <sup>1</sup> / <sub>2</sub>	47
4.789	2	0.36	0.15	48,300	61,025	29 <sup>3</sup> / <sub>4</sub>	48 <sup>3</sup> / <sub>4</sub>
6.664	1	0.30	0.11	46,250	57,700	31	56
11.071	0	0.32	0.09	38,650	57,625	37	63 <sup>1</sup> / <sub>2</sub>
AWS Class E6012 Electrodes							
0.340	7	0.33	0.15	48,125	64,925	15 <sup>1</sup> / <sub>4</sub>	35
1.896	5	0.37	0.15	51,000	68,225	17	35 <sup>3</sup> / <sub>4</sub>
2.734	2	0.29	0.10	52,400	65,300	25 <sup>1</sup> / <sub>2</sub>	51
3.299	0	0.32	0.12	54,375	68,975	24 <sup>3</sup> / <sub>4</sub>	50 <sup>1</sup> / <sub>4</sub>
5.890	0	0.36	0.14	48,325	60,600	27 <sup>3</sup> / <sub>4</sub>	40 <sup>1</sup> / <sub>2</sub>
AWS Class E6020 Electrodes							
0.528	0	0.33	0.05	46,675	57,400	36 <sup>1</sup> / <sub>2</sub>	66 <sup>3</sup> / <sub>4</sub>
1.310	1	0.41	0.08	45,875	57,325	35 <sup>1</sup> / <sub>2</sub>	53 <sup>1</sup> / <sub>2</sub>
2.425	0	0.30	0.06	43,450	57,800	34	69
2.520	0	0.26	0.02	45,075	59,575	33 <sup>1</sup> / <sub>4</sub>	62 <sup>1</sup> / <sub>4</sub>
3.476	0	0.31	0.03	44,400	57,300	35 <sup>3</sup> / <sub>4</sub>	59 <sup>1</sup> / <sub>2</sub>

terest to note that in the case of fillet welds, while they have never been observed where the fillet fails under transverse shear conditions, there have been numerous occurrences in longitudinal shear tests.

Weld metal deposited with electrodes which have the characteristic spray type arc contains less fish eyes than that deposited with a jet type arc: this has been verified by means of oscillograph measurements. No occurrences have been observed in welds made under water, of which a great many have been examined, and this may be due to the extremely coarse grain structure of such welds.

The accompanying table shows physical properties and chemical composition of weld metal containing 0.06 pct C, 0.03 pct S, and 0.015 pct P. This table summarizes the results of approximately 5000 tests made on both production and test welds made according to AWS ASTM specifications A233-43T. On the basis of these results it would appear that quite a little is known about the welding conditions under which fish eyes occur, the physical, chemical, and metallurgical conditions of the metal containing them, and what to do to make them disappear, but why they are there is still a moot question.

## Bright Galvanizing Bath

A GLYCERINE-containing bath to be used for the bright galvanizing of iron objects, is described in a report from Europe, by R. L. Kaufmann, recently made available through Chemical Abstracts (39:4287, 1945). Each liter of the bath is described as containing:

Zinc oxide ..... 35.0 Gm.  
Sodium cyanide ..... 100.0 Gm.

Sodium hydroxide ..... 100.0 Gm.  
Sodium sulfide ..... 0.5 Gm.  
Glycerine ..... 5.0 Gm.

A dense, shiny zinc coat is obtained in this bath at room temperature, using a current density of 7 amp per sq dm. The coating is made still brighter by subsequent dips in 4 pct nitric acid and 18 pct chromic acid solution.



**S**HELDON V. WOOD, president and manager, Minneapolis Electric Steel Castings Co., was elected president of AFA for 1946-47.

**T**HE American Foundrymen's Association last week in Cleveland culminated 50 yr of activity with a Golden Jubilee convention and exhibition which in scope and size served as a very fitting monument to the foresight of the 345 men who called the first national meeting of the association in 1896 in Philadelphia.

In an atmosphere mixed with optimism over the progress being made in casting technology and pessimism over the continued decline in man-hour productivity, some 15,000 foundrymen and their guests visited the equipment and material exhibits in the Cleveland Public Auditorium and participated in the 5-day program of technical sessions and roundtable meetings. The size of the exhibition (encompassing 280 exhibitors) and the high attendance attest to the growth of the association from its humble beginning in 1896. At that organization meeting, the 345 men in attendance listened to 10 technical papers. The first exhibit sponsored by the association (1906) boasted 50 exhibitors.

The philosophy underlying the meeting was probably best expressed by Fred J. Walls, International Nickel Co., the retiring AFA president, who said in his annual message that progress is made only through co-operative effort and that the growth of the foundry industry over the past 50 yr has reflected the development of AFA as an integral part of the industry

## AFA Golden Jubilee Congress

through its program to promote wider use of castings and to improve casting quality.

The annual business meeting held on Thursday saw the unanimous election of Sheldon V. Wood as president of the association for 1946-47. Mr. Wood, who takes office in July, is president and general manager of Minneapolis Electric Steel Castings Co., Minneapolis. He has served the association as vice president and as a director and is a past chairman of the Twin City chapter. He also served recently as vice president of the Steel Founders Society.

Max Kuniansky, vice president and general manager, Lynchburg Foundry Co., Lynchburg, Va., was chosen vice president of AFA for 1946-47. Mr. Kuniansky has been prominent in committee work in the gray iron division for many years and is a director of the Chesapeake chapter. In 1941 he was the recipient of the McFadden gold medal for outstanding contributions to the industry.

New members of the board of directors elected at the annual meeting were: Horace A. Deane, works manager, Brake Shoe & Castings Div., American Brake Shoe Co., New York; S. C. Wasson, manager, National Malleable & Steel Castings Co., Chicago; B. L. Simpson, president, National Engineering Co., Chicago; J. E. Kolb, patternshop superintendent, Caterpillar Tractor Co., Peoria, Ill., and H. G. Lamker, superintendent of foundries, Wright Aeronautical Corp., Paterson, N. J.

An international touch was lent to the annual business meeting by T. Makemson, secretary, Institute of British Foundrymen, who conveyed to the American foundrymen, in this the first post war AFA convention, greetings from foundry societies in Europe. Mr. Makemson pointed out that the formation of AFA in 1896 required unusual courage and vision for at that time it was the only foundry organization of its type.

The 1946 AFA Foundation Lecture, presented at the annual business meeting, was delivered by Guillian H. Clamer, president and general manager, Ajax Metal Co., Philadelphia. An AFA past president and a 1933 gold medalist, Dr. Clamer spoke on "Test Bars for 85-5-5 Alloy." His lecture was basically a study of the limitations of test bars. He pointed out that through a study of these limitations it was hoped to find means of establishing better test bars. His lecture



**Progress through cooperative effort keynotes 50th anniversary meeting ... Sheldon V. Wood elected president for 1946-47 ... Wartime progress in casting quality and production techniques revealed in equipment exhibition and technical sessions ... Representatives from 24 nations attend and give convention international atmosphere.**

also covered the effect of melt practice on melt quality, as indicated by test bars.

One of the highlights of the annual convention has always been the banquet, and this year was no exception. The recipients of the awards and medals presented at the banquet are noted elsewhere in this report. The principal speaker at the banquet was Brig. Gen. D. Armstrong, commandant, Army Industrial College, Department of Research, Washington, who spoke on "The Foundry in War and Peace."

The international atmosphere that pervaded this year's meeting was noticeable in both the technical meetings and at the exhibit booths. Many of the European visitors contributed exchange papers at various technical sessions. An informal meeting of representatives of foundry associations of Britain, Czechoslovakia, France, Holland, Belgium and the U. S. was held during the convention to discuss means of reactivating the International Congress of Foundry Technical Associations. As a result of this meeting, an effort is to be made to have the friendly nations who were affiliated with the congress before the war appoint an official representative to attend a meeting to be held later this year. This meeting would have for its object the establishment of collaboration be-

tween various foundry technical associations, the exchange of publications, the fixing of a calendar of world and other international congresses and other pertinent matters.

In addition to the metallurgists from abroad, there was also a considerable group of European representatives seeking opportunities for representing American equipment makers in Europe. The reports of equipment needs in Europe at times approached the fantastic, but the difficulties of overcoming the lack of funds for the purchase of equipment, plus the tremendous backlog of unshipped domestic business is acting to dull the interest of American manufacturers in foreign markets for the time being.

The convention atmosphere which surrounds an exhibition of the size held in conjunction with the Golden Jubilee meeting tends to dull the acuteness of one's sense of observation. Yet, with liberal allowances for the effect of this factor, the appraisal of most seasoned engineers and executives at the convention was that this year's exhibit probably contained more innovations in practice and equipment than has ever been observed at such an exhibit. Space does not permit a discussion of all the exhibits falling in this category, such as the high frequency core baking unit, the sand

### 1946 AFA Medalists



**PETER L. SIMPSON** Memorial Medal—Awarded to Howard F. Taylor, research associate, Massachusetts Institute of Technology.



**JOHN H. WHITING** Gold Medal—Awarded to Peter Blackwood, Ford Motor Co., of Canada, Ltd., Windsor, Ont.



**M. H. McFADDEN** Gold Medal—Awarded to Hyman Bornstein, director of testing and research laboratories, Deere & Co., Moline, Ill.

reclamation unit combining wet washing with thermal treatment, the integrated mold making line incorporating several unusual conveying devices, the Al-Mg alloy containing beryllium and boron, etc., etc. In summary, though, the exhibition did serve to point up with dramatic emphasis the great strides made in foundry knowledge and practice during the war years. The technical sessions also highlighted the rapid advance of casting technology. This year's technical meetings presented a broad program of practical information covering practically the entire casting field. The roundtable and open-forum type of meetings appeared to be especially effective in promoting an exchange of ideas on production problems. Nor did the

association's program planners ignore the long range effort to provide engineers and casting users in general with information of the type that would be helpful in designing for the use of castings. Symposia and roundtables covering the engineering properties of cast metals were well attended. Space limitations prohibit a complete review of all the papers presented at Golden Jubilee meeting. The complete technical program was published in the May 2 issue of THE IRON AGE, and copies of papers may be obtained from the American Foundrymen's Association, 222 West Adams St., Chicago. Abstracts of a few of the many excellent papers presented at the convention are presented herewith.

### Gray Iron Inoculation Theories

A GENERAL review of inoculation mechanics and theories was contained in a paper presented by H. W. Lownie, Jr., metallurgical engineer, Westinghouse Electric Corp., East Pittsburgh, Pa., at a session of the Gray Iron Division. Rather than present throughout his discussion references to various authorities and other discussions of inoculation, the author noted three<sup>1</sup> references which he recommended to foundrymen interested in more extensive details concerning inoculation. Lownie also pointed out that these references contain extensive bibliography on the subject.

Inoculation, Lownie said, might be defined as that process in which an addition is made to molten cast iron for the purpose of altering or modifying the microstructure of the iron and thus improving the me-

chanical and physical properties to a degree not explainable on the basis of the change in composition. Illustrating this point, the author cited an iron of 3.2

<sup>1</sup> Epstein, S., *The Alloys of Iron and Carbon*, vol. I—*Constitution*, McGraw-Hill, 1936. (Especially Chapters I and V, and p. 396.) *Alloy Cast Irons Handbook*, American Foundrymen's Association, 1944. (Especially Chapter 4.) Lownie, H. W., Jr., "Ladle Inoculation Improves Gray Iron Properties and Structure," *The Foundry*, vol. 71, Nov. and Dec. 1943. (Especially bibliography.)

pct total carbon and 2.2 pct Si in the as-melted condition, which might be inoculated with an addition of 0.2 pct Si. Some of the properties of the resulting 3.2 pct TC, 2.4 Si iron will be considerably different from the properties of the original untreated iron, or from the properties of an iron melted directly, without inocu-

### Vice-President and New Directors

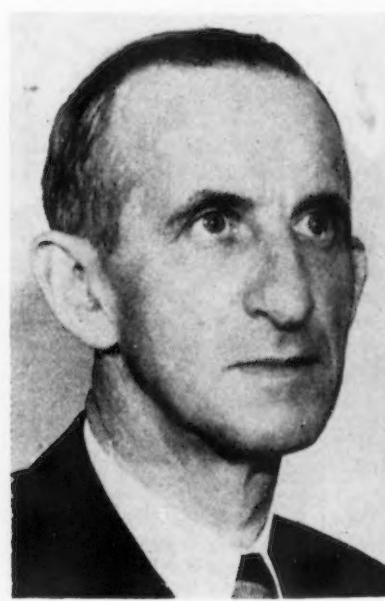
MAX KUNIAISKY, vice-president and general manager, Lynchburg Foundry Co., elected AFA vice-president for 1946-47.



J. E. KOLB, pattern shop superintendent, Caterpillar Tractor Co., Peoria, Ill., AFA director.



H. G. LAMKER, superintendent of foundries, Wright Aeronautical Corp., Paterson, N. J., AFA director.





lation, to the 3.2 pct C, 2.4 pct Si composition.

This definition is intended to exclude alloy additions made to the molten metal for the sole purpose of affecting the chemical composition of the melt (as ferrochromium, nickel, etc.), and to exclude materials added to the charge when those materials react with the metal before melting is completed.

One method of classification of inoculants is by placing them in two groups: Group 1—Inoculants which have the sole duty of producing inoculating effects, such as a changing of the graphite distribution and reduction of chill depth, to a degree considerably greater than can be explained on the basis of a change in composition. These inoculants usually contain one or more of the following elements: carbon, silicon, calcium, titanium, zirconium and aluminum.

Group 2—Inoculants which, in addition to producing inoculating effects to a degree considerably greater than can be explained on the basis of a change in composition, also exert a supplementary effect which is explainable on the basis of a change in composition. In addition to one or more of the elements listed in group 1, these inoculants also contain one or more additional elements which are not essential to the inoculating reaction but which do exert supplemental effects which are desirable in some applications.

The most common supplemental alloys used in this latter type of inoculant are chromium for the stabilization of carbide (pearlite), or nickel to promote carbide decomposition. Chromium and nickel are not considered as inoculating elements in themselves as the effect of these elements are explainable on the basis of the change in chemical composition. Typical ladle inoculants which may be divided into these two groups are shown in the following table.



**F**RED J. WALLS (left), International Nickel Co., retiring AFA president, congratulates S. V. Woods on his election to the AFA presidency for 1946-47. Mr. Woods will take office in July.

#### Classification of Typical Ladle Inoculants

Group 1		Group 2
Ca-Metal	Si-C	Cr-Si-Mn-Ti-Ca
Ca-Si	Si-Mn	Cr-Si-Mn-Zr
Ca-Si-Ti	Si-Mn-Zr	Mo-Si
Fe-Si	Si-Ti	Ni-Si
Graphite	Si-Zr	

#### Elected at AFA Convention

**B.** L. SIMPSON, president National Engineering Co., Chicago, AFA director.



**H**ORACE A. DEANE, works manager, Brake Shoe & Castings Div. of American Brake Shoe Co., New York, AFA director.



**S.** C. WASSON, manager, National Malleable & Steel Castings Co., Chicago, AFA director



## Awarded AFA Honorary Life Membership



**W**ILLIAM J. COANE, vice-president,  
Ajax Metal Co., Philadelphia.



**H**AROLD J. ROAST, vice-president,  
Canadian Bronze Co., Ltd.

AT RIGHT

**T.** MAKESOM secretary, Institute of British Foundrymen, who conveyed the good wishes of European foundrymen to American foundrymen.



With the exception of metallic calcium and graphite, all the inoculants in this table probably also contain aluminum in small amounts but which nevertheless may be quite significant in its effect.

The most pronounced change resulting from inoculation is the change occurring in the distribution of graphite flakes through the matrix, dependent upon the conditions of metal composition, cooling rate, and inoculation.

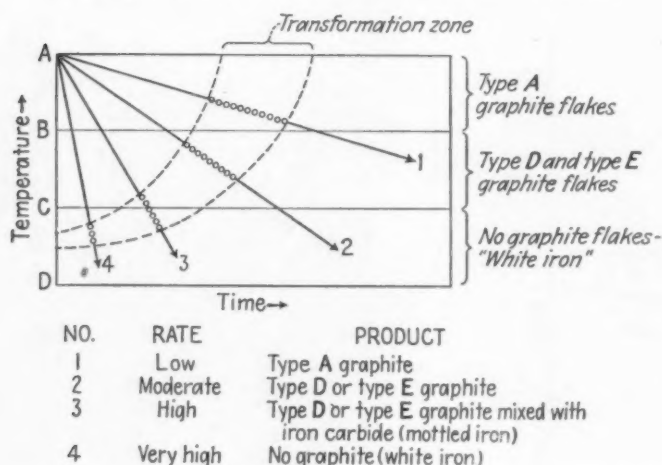
Lownie pointed out that inoculations are added to cast iron to eliminate the undesirable type D graphite distribution (AFA-ASTM classification) and its associated ferrite masses. Type E is also considered an undesirable form. This statement was qualified by the author by saying that while these two types are to be

avoided, there are cases where the formation of any type of graphite is preferable to the occurrence of massive iron carbide (white iron).

The paper contained a number of enlightening "behavior diagrams" to illustrate, in general terms, the effect of the cooling rate on graphite flake formation. These diagrams also associated the time element with the temperature factor in this transformation. Lownie pointed out that as the cooling rate becomes lower, the transformation temperature becomes higher and the time required for completion of the reaction becomes longer. The higher temperatures and longer transformation times at low cooling rates cause the graphite flakes forming at low rates to become quite large. Rapid cooling and rapid formation of flakes result in flakes of small size. Thus, type A flakes, formed at low cooling rates, are larger than type D or E (formed at the higher rates). Fig. 1 is a representation of the time-temperature factors as they effect the mechanics of graphite formation. At rate 1 (curve 1) graphite formation will begin and end in the type A region. At the somewhat higher rate 2, the graphite will form in the type D and E region. At the very high rates, such as 4, graphite will be completely suppressed and white iron, free of graphite, will be formed. Rates intermediate to these examples are also possible.

Irons which do not complete the formation of graphite in the type A region (above boundary line B), are referred to as undercooled or supercooled irons. It is the purpose of inoculation to prevent such undercooling and to cause all the graphite to form as type A. Changes in composition, Lownie, said, also have the effect of a displacement of the transformation zone and this phase of graphite formation was also covered in the paper.

Fig. 1—Graphite flake formation at various cooling rates.





The effect of inoculation Lownie summarized, may be stated quite simply—inoculation raises the “transformation zone.” That is, inoculation may make an iron that would solidify (at a given cooling rate) as white iron, or with type D or type E graphite, actually solidify with type A graphite.

In this respect the inoculation effect is somewhat akin to “softening” the analysis of the iron, but instead of reducing tensile properties due to “softening” of the matrix, it actually improves properties due to the better distribution of the graphite flakes.

As low carbon, low silicon irons have considerable tendency to undercool, inoculation will be quite potent with such irons. However, high carbon, high silicon irons, which tend for the most part to solidify with type A graphite anyway, benefit less from inoculation.

High carbon, high silicon irons are often poured into thin sections which introduce a high cooling rate which promotes undercooling. Therefore, inoculation is often as desirable for these irons as for the low carbon, low silicon types.

If a given inoculation treatment resulted in the formation of type A graphite flakes exclusively at even the highest cooling rates, then such an iron could be called “completely inoculated.” Present inoculation practices do not result in such “complete inoculation.”

Various investigators have proposed theories explaining the effect of inoculation, but up to the present time no conclusive evidence has been obtained to establish any one theory.

The proposed theories overlap somewhat, but may be designated as:

- (1) Graphite nuclei theory.
- (2) Degasification theory.
- (3) Silicate slime theory.

According to the graphite nuclei theory, graphite particles in the melt act as nuclei to begin the graphitization phenomenon. Such nuclei may be imagined as extremely small solid particles of graphite in the molten iron.

In order to form in the type A distribution, graphite flakes must form on nuclei distributed through the melt. In the case of an iron which has solidified with type D or type E graphite (or as white iron), it has done so because it has passed through the temperature region of type A graphite formation without forming any graphite flakes, and thus the graphite has formed in the lower temperature pattern.

Inoculation is considered here as the addition of effective graphite nuclei to the molten iron. The presence (or increase) of the number of effective nuclei makes the iron more likely to form type A graphite at any given cooling rate.

The graphite nuclei theory is substantiated by the fact that the late addition of solid elemental carbon (granular graphite) to an iron normally solidifying with type D or type E graphite is known to change solidification to the type A pattern.

Further evidence is the fact that certain alloys, which are efficient inoculants when added in the solid granular form, lose their inoculating ability when they are added as superheated molten alloys. Such superheating of the alloys is supposed to destroy the nuclei.

One investigator has attributed the potent effects of silicon-bearing inoculants to a local concentration of silicon; this concentration promoting a shower of fine graphite nuclei in the melt. It is interesting in this connection to note that most of the commercial inoculants contain appreciable amounts of silicon, a powerful “graphitizing alloy.”

The tendency for superheated irons (irons heated considerably above the melting point) to form type D and type E graphite flakes in preference to type A can be attributed (according to this theory) to the destruction of graphite nuclei at high temperatures in the irons.

The degasification theory attempts to explain the mechanism of inoculation on the basis of reactions occurring between the inoculant and dissolved or chem-

**S**PEAKERS at one of the aluminum and magnesium division luncheon meetings. The speakers are, left to right: J. C. Fox, Doehler-Jarvis Corp., New York; M. Corson, consultant, Acme Aluminum Alloys, Inc.; A. T. Ruppe, Bendix Products Corp., South Bend, Ind.; R. E. Ward, Eclipse Pioneer Div., Bendix Aviation Corp., Bendix, N. J., committee chairman; W. Bonsack, National Smelting Co., Cleveland; A. Sugar, American Metal Co., New York.



**W** M. MALONEY, AFA secretary (left), congratulates L. Kinsinger, Caterpillar Tractor Co., on the latter's winning of the AFA apprentice contest in the gray iron pattern making division.



ically combined gases, such as oxygen, hydrogen, nitrogen, etc.

These "degasification" reactions may produce inoculation by (1) the elimination of "chill-forming" gases, and (2) the formation of inclusions in the melt which may act as effective nuclei.

It is known that inoculated irons show a "wearing off" effect. If molten iron is held for an appreciable time (of the order of 15 min.) between the inoculation and pouring, the effect of inoculation gradually "wears off" and even may be eliminated.

Proponents of the degasification theory hold that this "wearing off" is due to reabsorption of the gases which were eliminated by the inoculation treatment.

The silicate slime theory provides for a submicroscopic "slime" or "pulp" of ferrous silicate inclusions which act as nuclei for the formation of coarse graphite. The theory is supported by the fact that a slag which removes silicon or ferrous oxide helps to promote the formation of fine graphite.

It has been pointed out that there is an analogy between this behavior and the popular belief that submicroscopic inclusions affect grain size in steel.

Numerous efforts have been made by various investigators to either prove or disprove each of the three theories but, as yet, no such effort has been wholly successful.

## Aluminum Alloy Die Casting

THE aluminum and magnesium division of AFA, long one of the association's most active divisions, attracted large numbers of uninhibited members to its meetings and luncheon roundtables. Quite aside from a number of excellent papers on various phases of magnesium and aluminum casting, the report of the die casting committee of the division received considerable praise for its report on aluminum alloy die casting. In this report the committee waded through rather controversial topics with skill and a forthrightness seldom found in committee reports. The report opens with a discussion of the design and construction of dies, and covers heat treatment in some detail. The die steel nominally used for dies, according to the report, runs around 5 pct Cr, 1 pct Mo and 0.4 pct C. The desired Brinell hardness was noted as 444 (with a 3000-kg load), with the range of 416 to 460 being generally satisfactory.

The report covers the general construction and operation of both the goose neck and the cold chamber types of casting machines in detail. It points out that the iron pick-up from the pot in the gooseneck type puts this method at a considerable disadvantage to the

cold chamber type and is probably one of the factors resulting in a constantly diminishing use of the goose-neck units.

Casting procedures, types of metals used, design of castings, casting finish, and surface conditions are also covered. The report touches upon the Cu-Si alloy which appears to be finding wider use for general die casting use. This alloy, an outgrowth of the war, is based on aircraft scrap, most of which has a 4 pct copper content. By eliminating most of the magnesium and adding up to 9.5 pct Si, the alloy, the report states, has been found quite satisfactory for die casting, having good casting characteristics and excellent physical properties.

In the Mg-Al types, alloy ASTM G2 was listed as superior where high impact resistance, high ductility and optimum corrosion resistance are desired. This alloy was said to take and retain a "beautiful luster" when polished and has optimum machinability characteristics. However, it was pointed out, it is more difficult to cast than the silicon type. In addition to the value of this report to producers of die castings, it also contains much data of fundamental value to the user of die castings.

## Insulated Risers for Bronze Castings

THE use of insulating pads and risers on bronze castings was discussed in a paper by H. F. Taylor and H. C. Wick, both of whom were with the steel castings section of the Naval Research Laboratory, Washington, when the paper was prepared. The senior author of this paper is now a research associate at MIT and is also the first recipient of the AFA's new award, the Simpson Memorial Medal. The paper reviews some of the early studies of gating techniques at the Naval Laboratory and discusses the relationship of directional solidification to sound castings. It is pointed out that the use of atmospheric pressure, of which Taylor has long been an exponent, combined with a means of delaying solidification of the riser until the casting is completely fed will overcome many of the more common ills which nonferrous foundrymen suffer from. This paper proposes the use of gypsum plaster as a material for insulating risers and by

this means retarding the solidification of the metal in the riser. The authors give the results of a number of test to determine the relative insulating values of gypsum and sand. In one test, two identical test ingots, feeding from a common gate, were cast. One ingot was surrounded by sand, the other with plaster. The time required for complete solidification of the plaster insulated ingot was twice that of the sand specimen. In another test, utilizing the fluidity spiral, the plaster spiral was 34 in. long, as compared with 15 in. for the spiral cast in sand.

The authors also presented data showing relative physical properties (tensile strength and elongation) of test coupons from castings produced with and without plaster insulation. Summing up the advantages of the use of plaster insulating pads and riser sleeves, sounder castings, increased yield and reduced cleaning costs were listed.



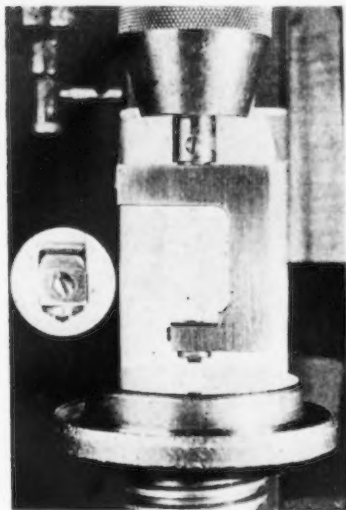
# New Equipment...

## Shop and Laboratory Instruments

**Hardness testers, pyrometers, spectrometers, flow meters and process controllers of various types are some of the units described in this week's review.**

### Carbide Hardness Tester

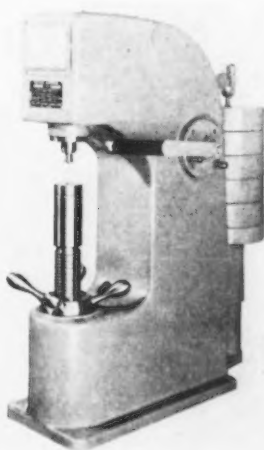
**T**HE use of cemented carbides in the field of hardness testing has been developed by *Pratt & Whitney Aircraft Div., United Aircraft Corp.*, East Hartford, Conn. This company has used Carboloy cemented carbide for the checking of comparative hardness inside of small bores. The actual application is the checking of hardness of threads in castellated aircraft engine nuts. The carbide is in the



form of an "edge" penetrator mounted in a C extension arm on a Rockwell machine. The Carboloy penerator has an obtuse angle with a 0.010 in. radius at the edge. A modified C shaped steel holder is attached to the Rockwell machine enabling the carbide edge to contact the internal threads of the nuts being checked. The readings obtained are relative and the scale used is based on readings taken from checks of both acceptable and nonacceptable threads. This penetrator is said to prevent indenting or nicking of the testing edge.

### Brinell Tester

**A** BRINELL testing machine of the manually operated bench type for the hardness testing of



metals has been announced by *Steel City Testing Laboratory*, 8843 Livernois Ave., Detroit 4. The multi-beam and dead weight principle is employed, with weights calibrated for loads of 500 to 3000 kg. A hydraulic dashpot eliminates any shock on the load as it is applied. Standard equipment furnished with this machine, which is known as Superior model J, consists of a flat anvil, V anvil for testing of rounds, and a standard Brinell microscope with micrometer scale and case.

### Surface Roughness Tester

**A** PROFILOMETER tracer, said to increase the range of sur-

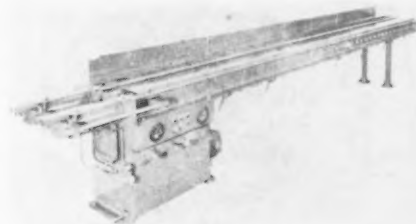


faces on which roughness measurements can be taken, has been intro-

duced by *Physicists Research Co.*, Ann Arbor, Mich. This type AW tracer may be used to measure surface roughness on outside diameters and on inside diameters down to 1/4 in. Also it will measure, it is said, both internal and external tapered surfaces and gear teeth. Used in conjunction with the profilometer, the tracer is claimed to increase the versatility, efficiency, and convenience with which measurements may be made.

### Tensile Strength Tester

**A** TENSILE strength tester has been developed by *John S. Barnes Corp.*, 301 S. Water St., Rockford, Ill., to test the tensile strength or modulus of elasticity of metal products, such as chains,

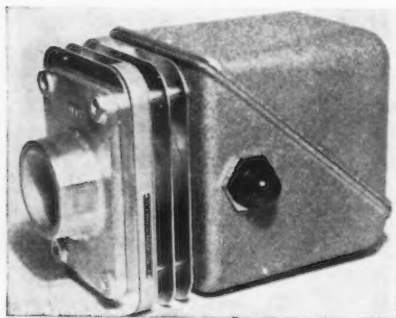


wires, cables, bar stock, etc. This machine may also be used to give a definite set to chains. The tester is 25 ft long, and can accommodate chains and cables of any length up to 20 ft. Easily adjusted platforms are provided to eliminate sag, thereby insuring maximum accuracy in testing. Two 4-in. bore by 8-in. stroke low friction cylinders provide initial test loads up to 1500 lb. Final test loads may be as great as 15 tons. A timing device automatically removes the test load. Elongation of the metal under test is registered automatically on verniers, which may be reset to zero at any time during the test, thus permitting comparative readings for

any portions of the cycle. The simplicity of this tester is said to enable an inexperienced operator to make tests that are quick, safe, and accurate without resorting to laboratory methods.

#### Photoelectric Flame Monitor

**A** FLAME-FAILURE safeguard, known as Fireye, has been designed by *Combustion Control Corp.*, 77 Broadway, Cambridge 42, Mass., to provide explosion protection for industrial and commercial



oil and pulverized coal burners. Fireye is photoelectric, being actuated not by the effect of the flame failure but by the flame itself. When the flame fails, the instrument cuts off the fuel and sounds an alarm. A phototube and amplifying system, housed in a dust-tight aluminum case make up the unit. The entire control is mounted directly on the furnace wall, so aligned that it permits the photoelectric cell to observe the flame through a 2 in. pipe connection which serves as both a sighting tube and a support for the equipment. A heat-absorbing filter in the lens system and a baffle system protect Fireye from all radiated heat.

#### Pyrometers

**F**OR temperature readings of molten nonferrous metals, on a direct-reading type dial, *Claud S. Gordon Co.*, 30th & Warren St., Chicago 16, has designed a cast



aluminum and brass pyrometer, known as an Xactemp pyrometer. The model illustrated here has a 43-in. stainless extension and a standard 7-in. Marshall tip which permits readings to be taken below

the surface of the metal. The indicator is of medium resistance, not affected by thermocouple length, and yet, it is said, travels across the scale rapidly enough to follow the most sensitive thermocouple. It is provided with an Alnico V magnet and has a 3½-in. scale reading from 50° to 2500° F. This instrument needs no preliminary adjustments and is claimed to make possible better quality control and elimination of flaws, such as blowholes, burnouts, sand infiltration. The company has also produced an Xactemp pyrometer for all-around general applications. This hand instrument is said to give instant and direct readings, accurate to within a fraction of a scale division. Designed for use with most types of thermocouples, the pyrometer's heat treating applications include general checking in furnaces, lead and salt pots, galvanizing tanks and core ovens, and it may also be used for checking surface temperature of welds, heated rollers and forgings; ovens, hot plates, platens and furnace walls. The indicator has a long range starting at 50° F, is of medium resistance and claimed not to be affected by thermocouple length.

#### Gas Pressure Determinator

**F**OR the rapid determination of the gas pressure created by molding sand or cores, a portable gas pressure determinator has been developed by *Harry W. Dietert Co.*, 9330 Roselawn Ave., Detroit 4. This instrument uses a 1⅛ x 3 in. sand or core specimen which is attached to the stem of the determinator. The specimen is then immersed in

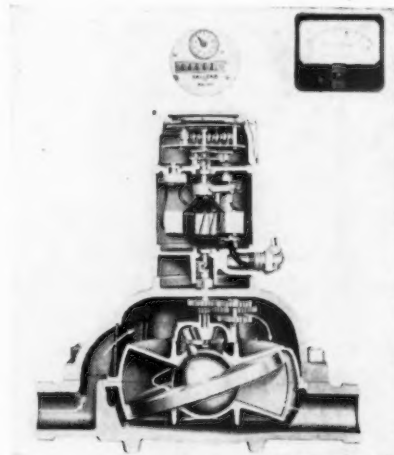


molten metal. The pressure of the gas envelope created by the specimen under test is shown in inches of water pressure on the gage of the determinator. The net weight of the unit is 5 lb.

#### Flow Meter

**F**OR measuring, indicating and totalizing various liquids used in industry the Veriflow meter has been announced by *Hays Corp.*, Michigan City, Ind. This instrument can indicate the rate of flow at a point remote from where the

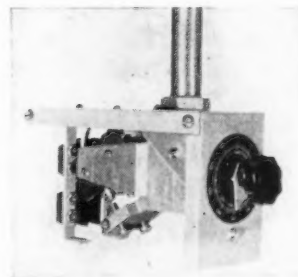
meter is installed, in addition to the flow indication and integrator which are integral with the meter itself. To secure the remote indication the generator is mounted on top of the flow meter, the same shaft operating both the generator



and the totalizing register. No external source of electricity is required because the indicating meter measures the output of the generator and is calibrated to indicate corresponding rate of liquid flow through the meter. The scale of the indicator can be calibrated to read in any values of flow desired. This meter, constructed for either wall or panel mounting, is said to be applicable for measuring the flow of oil in testing hydraulically operated mechanisms, the flow of water and chemicals in continuous manufacturing processes and the flow of heating or cooling liquid.

#### Temperature Control Switches

**T**EMPERATURE limit switches, available as a one, two, or three switch model, have been developed by *Burling Instrument Co.*, 253 Springfield Ave., Newark, N. J. The three-switch type can be used



where the load is divided into three parts, or where one switch is used for controlling, one as a high limit and one as a low limit. This model also gives definite steps or positions to a three or four position dia-

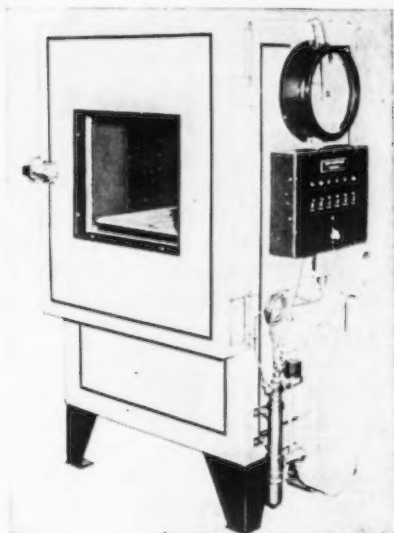


## NEW EQUIPMENT

phragm motor or three speed control of a variable speed motor. A corrosion and heat resisting tube, dial pointer for easy setting and a locking screw for setting temperature which has an increased adjustable range up to 700° to 1000° F are some of its features. The maximum differential between switches is approximately 150° with an operating differential of  $-\frac{1}{4}^{\circ}$  to  $\pm 25^{\circ}$ .

### Temperature and Humidity Chambers

**I**NSULATED variable temperature and humidity chambers for the simulation and control of atmospheric conditions have been announced by *Tenney Engineering, Inc.*, 26 Ave. B, Newark 5, N. J. The cabinets are scientifically designed to provide accurate simulation and control of any desired temperature, humidity and air cir-



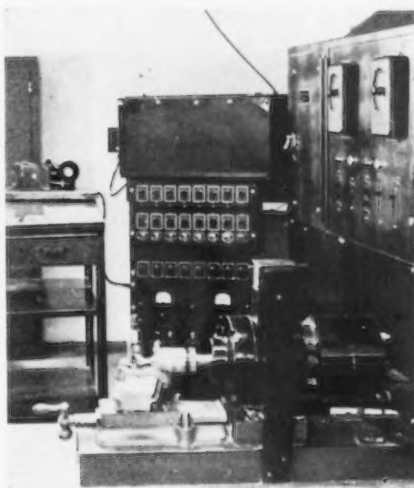
ulation condition in laboratory or production testing operations. Conditioned air is kept in continuous forced circulation without undesirable draft, thus providing uniform wet and dry bulb temperatures throughout the cabinet. A simple resetting of controls, it is said, will bring the cabinet to a new equilibrium within 10 to 15 min. Glass doors permit inspection of contents.

### Hydrion Papers

**S**IX Hydrion short range pH test papers have been announced by *R. P. Cargille*, 118 Liberty St., New York 6. Color changes for small pH intervals are so well defined, it is said, that values can be determined to 0.25 pH. These papers cover the range pH 1 to 14 and supplement the original Hydrion wide range papers.

### Direct-Reading Spectrometer

**A**N instrument which electronically measures the concentration of elements in alloys, and



automatically records the results, has been developed by the *Dow Chemical Co.*, Midland, Mich. This direct-reading spectrometer is claimed to make alloy analyses in 40 sec. The electronic method of measuring the intensity of spectrum lines eliminates the necessity for photographic and developing equipment and an expensive microphotometer, and avoids errors encountered due to film variation. The entire operation is automatic from the time the metal samples are placed in the instrument until the analysis is recorded on paper. Up to 14 elements, it is said, can be determined simultaneously. An operator can be trained in a single day to use this instrument.

### Spectro-Chemical Analyzer

**A**DIRECT-READING instrument, known as the Quantometer, which allows the quantitative chemical analysis of as many as 11 elements in metal alloys and chemicals in less than one minute, has been announced by the *Applied Re-*

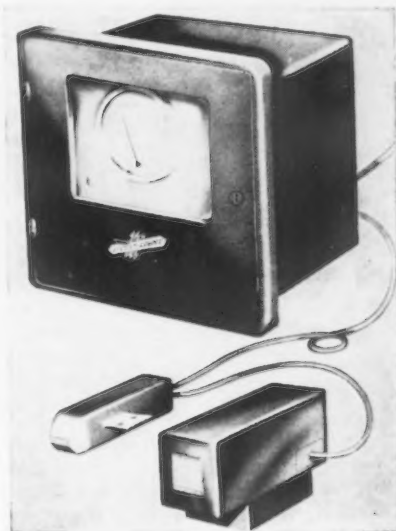


*search Laboratories*, 4336 San Fernando Rd., Glendale, Calif., and the *Harry W. Dietert Co.*, 9330 Rose-

lawn Ave., Detroit 4. An advantage of this instrument is said to be the speed with which it can simultaneously and automatically measure the quantities of elements present in a sample. These results appear as percentage composition on a series of counters, one for each element being determined. The Quantometer consists of a source unit which provides a powerful spark to the sample being analyzed, a spectrometer which disperses the light from the spark into a spectrum, and a recording console where the final analyses are shown. With the use of this instrument it is claimed that alloys can be produced with narrower specification-limits than heretofore.

### Electronic Counter

**K**KNOWN as Lectro-count, an electronic device that counts parts produced on any motor driven machine has been announced by the *Lansing Engineering Co.*, 934-36



Clark St., Lansing 6, Mich. An electronic control box where power requirement is adjusted may be placed near the machine or at a remote point. The machine counter, located at the machine, records the number of parts or the operation completed. A recording mechanism which can be located in the production superintendent's office, visualizes work progress recording number of pieces per minute, per hour, and per day. This permanent printed record aids timekeeping, and is said to permit accurate cost finding and to assist time study.

### Control Drive

**A**PULSING drive with single knob precision control of any type of reversible motor has been

announced by *Yardeny Engineering Co.*, 105 Chambers St., New York 7. Direction and extent of motor motion are under control of this single knob, which permits continuous ro-



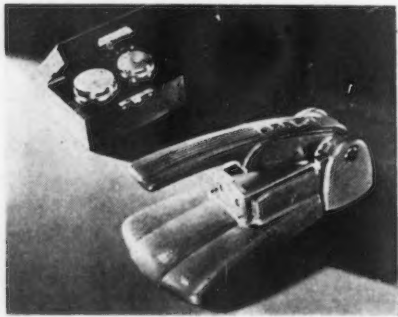
tation of the motor or motor motion in small increments. The drive is said to work on standard currents and frequencies and provides fine and coarse control in a manner that permits quick approach and precise positioning of the controlled object. Control of valves, cranes, lifts, rollers, presses and machine tools is possible with this drive, it is claimed.

#### X Ray Protective Creams

**W**ET and dry protective creams for use in processing of X ray films have been announced by the *B. F. Goodrich Co.*, Akron, Ohio. This product, known as *Clad*, is said to prevent accumulation of finger mark flaws during development of negatives. The dry cream can be used while handling the film, and leaves no stain. The wet type of *Clad* which is not affected by processing chemicals is for use in the dark room. It also reduces processing stains on operators' hands.

#### Triple Cut Shear

**A**TRIPLE cut specimen shear has been announced by the *Taber Instrument Corp.*, North



Tonawanda, N. Y. This shear was designed for use with the *Taber V 5* stiffness gage to assure accurate cutting of test specimens,  $1\frac{1}{2} \times 2\frac{3}{4}$  in., for uniform and com-

parable test results. It will cut 0.020 in. paper, plastic or thin metallic sheet and foil in preparation of stiffness or resilience test on the stiffness gage. A test strip is cut and detached from a sheet in one operation. Auxiliary weights for the *V 5* gage in 3000 and 5000 units are also available. These units are said to extend the testing range of the instrument to cover twice the capacity of the standard units.

#### Automatic Tube Tester

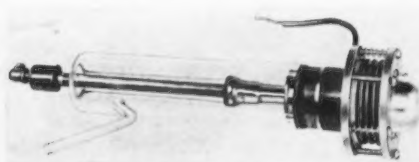
**S**OLENOID-operated tube tappers for uniform control of force, angle and timing of blows



on electron tube envelopes to detect shorts, noises, and faults due to tube structure have been developed by *Sylvania Electric Products, Inc.*, Emporium, Pa. Designed to eliminate variations resulting from the use of hand mallets by individual operators, these solenoid tappers provide six timed strokes which are alternately applied between two points on tube envelopes. The force, angle and timing of automatic blows may be adjusted to meet test requirements of different receiving tube types.

#### X Ray Tube

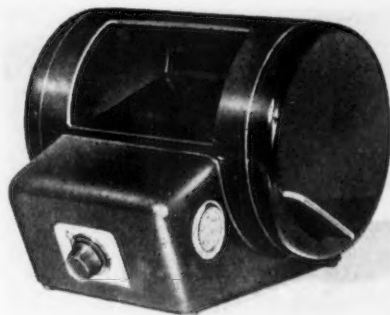
**A**N X ray tube, which emits X radiation from a hemispherical window throughout the entire



180° solid angle with an intensity in excess of five million roentgen units per min, has been produced experimentally by *Machlett Laboratories, Inc.*, Springdale, Conn. This tube is said to be equal in radiation intensity to 86.4 lb of radium, and creates vast possibilities for research in the field of X ray photochemistry.

#### Desk Viewer

**A**NNOUNCEMENT of the Cope-land super-viewer has been made by *Barnett Optical Laboratories*, 1218 Pratt Blvd., Chicago 26.



This instrument magnifies with clarity 2 x 2 in. and the larger  $3\frac{1}{4} \times 4\frac{1}{4}$  in. photographic transparencies, giving a three-dimensional effect. A rotating cylinder houses the optical system, permitting adjustment of the viewing angle up or down to suit the observer. A rheostat permits variable lighting and acts as an on-off switch. Complete freedom of head position is afforded by the large viewing window and the  $8\frac{1}{2}$  in. wide optical system composed of surface coated mirrors. The super-viewer is constructed of plastic and wood, and finished in optical instrument black.

#### Process Controller

**A**SAFETY emergency alarm, known as the *Brown* electronic contact controller, which protects process equipment and materials has been added to the line of air-operated controllers produced by the *Brown Instrument Co.*, 4496 Wayne Ave., Philadelphia 44. This instrument provides safety alarm principles that operate automatically. On-off control in addition to air control actuates motorized valves, solenoid valves, contactor



panels, signal lights, etc. The equipment is said to be suitable for steel, petroleum, chemical, plastic and related processing industries.



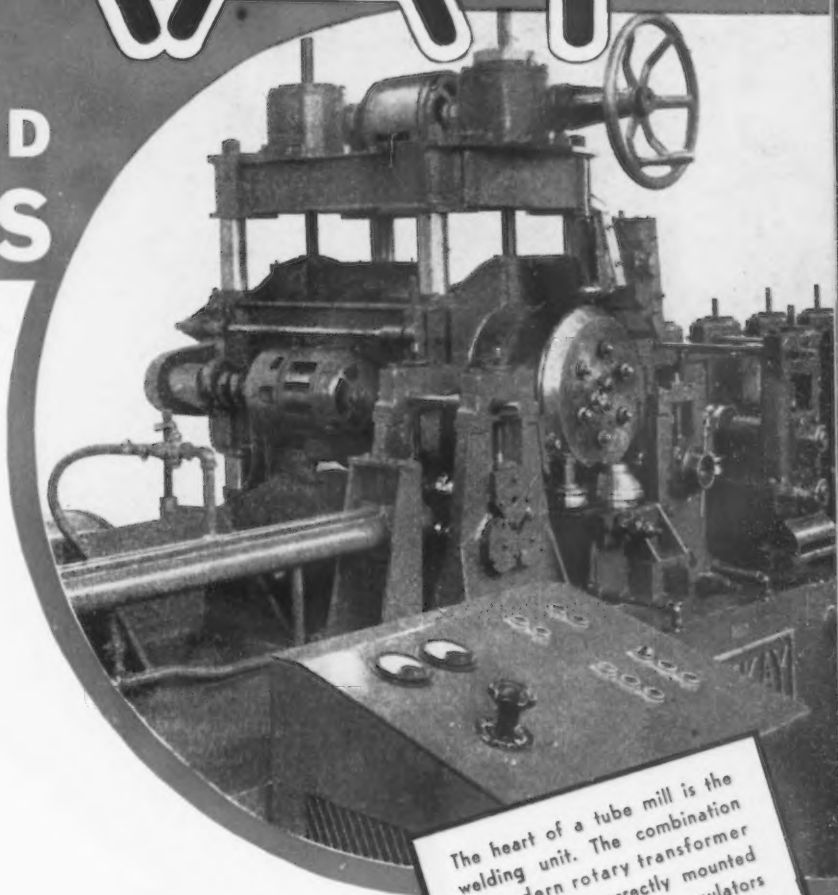
# McKAY

## RESISTANCE WELD TUBE MILLS

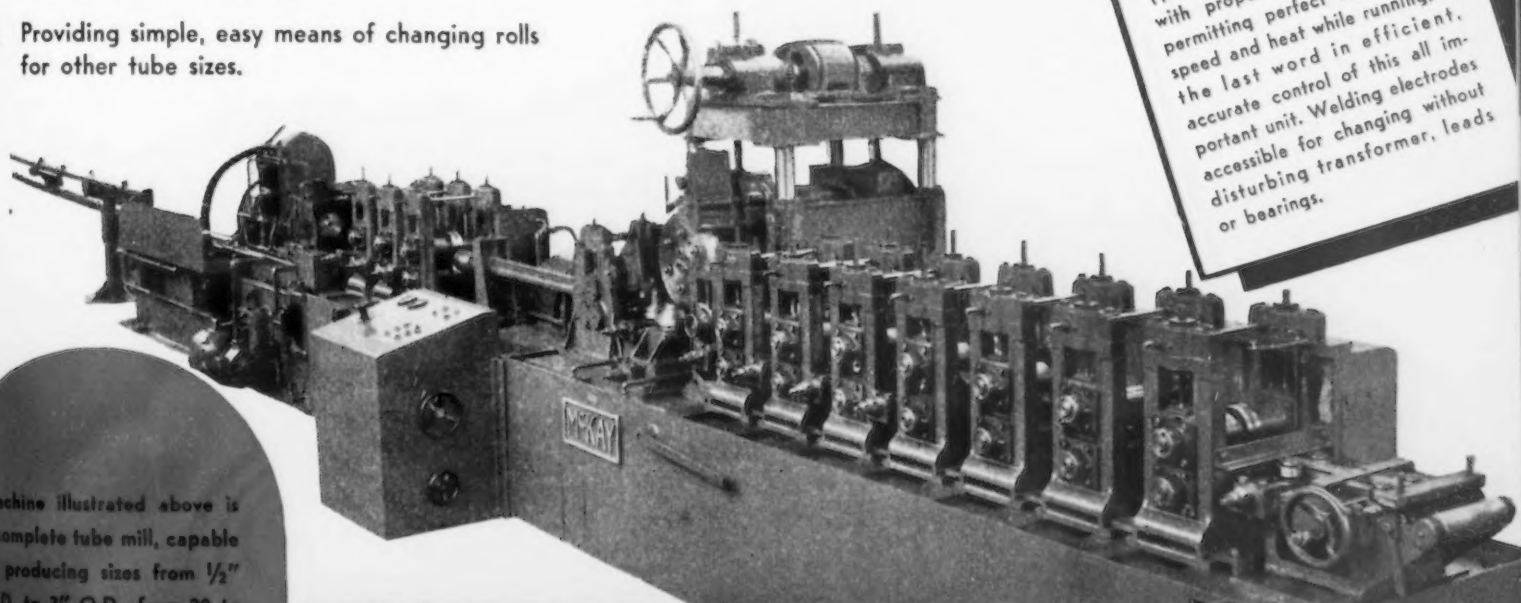
McKay Electric Resistance Weld Tube Mills can be put to work quickly and easily in your plant, producing high quality tubing.

This has been accomplished by:

1. Simplifying and centralizing all necessary controls.
2. Complete protection through approved safety devices and interlocks.
3. Supplying motor drives and push button controls to essential heavy duty motions.
4. Eliminating necessity of welding from coil to coil—strip from coil threads itself through machine, without manual assistance.
5. Automatic Rotary Head Cut-off (patent pending) producing lathe cut and accurately maintaining desired lengths.
6. Providing simple, easy means of changing rolls for other tube sizes.



The heart of a tube mill is the welding unit. The combination of modern rotary transformer (patented) correctly regulators with proper voltage matching of speed and heat while running, is the last word in efficient, accurate control of this all important unit. Welding electrodes accessible for changing without disturbing transformer, leads or bearings.



Machine illustrated above is a complete tube mill, capable of producing sizes from 1/2" O.D. to 3" O.D., from 20 to 11 gauge. We build a complete range of sizes to handle requirements from 1/2" dia., 20 gauge, to 10" dia., 1/2" wall. We also build a complete line of tube and bar draw-benches. We solicit your inquiries.

ENGINEERS AND MANUFACTURERS OF  
TUBE MILLS using . . .

ELECTRIC RESISTANCE WELD • OXY-ACETYLENE WELD • ATOMIC HYDROGEN WELD

COLD ROLL FORMING MACHINES

**THE MCKAY MACHINE COMPANY**

YOUNGSTOWN . . . . . OHIO

ASSOCIATE COMPANY The WEAN ENGINEERING CO., Inc. • WARREN, OHIO

# Assembly Line . . .

WALTER G. PATTON

• Detroit facing an industrial stalemate . . . Slow recovery is forecast . . . Automobile companies look at gas turbines and television.



**D**ETROIT—The coal strike and its corollary, the railroad embargo, have hit Detroit a crippling blow. It is apparent that the city cannot now recover quickly even though coal deliveries are resumed promptly.

The Ford Motor Co. has already closed and its 110,000 production employees throughout the country have been asked to take their annual vacations under the terms of the UAW contract which provides for a 2-week vacation with pay. However, it has been ruled by Dr. Harry Shulman, umpire of labor disputes at the Ford plant, that the company cannot apply a vacation-with-pay plan to employees who are laid off for an indeterminate period because of a shutdown. Ford is urging employees to take their vacations voluntarily during the shutdown period but the fact that 17,000 persons in Detroit filed claims for benefits at the office of the Michigan Unemployment Compensation Commission in three days, many of them Ford workers, indicated that most workers' choice would be compensation now and vacations later.

The Ford Motor Co. is down for an estimated 30 days. Announcing the suspension of operations, Ford

made it clear that the company has reached the end of its ability to build cars and trucks at even the limited production rate now prevailing. Restrictions on rail movements, it was explained, caused by the coal impasse dispelled any final hopes of continuing operations.

Instead of improving, part shortages due to strikes in the plants of Ford suppliers have become worse. At the time of closing, 42 important Ford suppliers were closed by strikes. In addition, the Chicago brownout was limiting the output of 40 more suppliers. Ford coal and scrap stockpiles were described as "dangerously low."

All final assembly lines in the Rouge B building and branch plant assemblies may be closed by the end of this week. The following operations will be continued: Coke ovens, blast furnaces, electric furnace building, jobbing foundry, steel foundry, open hearth, rolling mill and pattern shop. Foundry operations at the Rouge may be halted at any time. The Lincoln plant and the Highland Park tractor plant are already shut by a shortage of crankshafts and spindles and will remain closed.

A GM shutdown previously announced, has been cancelled and the corporation intends to continue its present curtailed output. The closing operation will be progressive with hardest hit departments closing first. Throughout the nation, 215,000 GM workers will be affected if operations cannot be maintained.

Chrysler assembly lines have been impaired because of the shortage of parts and the rail shipping embargo. A large portion of Chrysler's 110,000 employees work in the Detroit area; about 10,000 workers will be immediately affected.

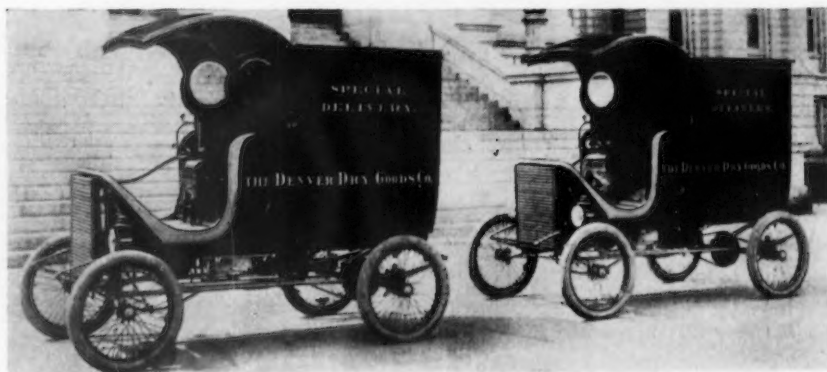
**W**HEN it is recalled that 84 pct of the motor cars produced during the past week were made by GM, Chrysler and Ford, the seriousness of the present situation can hardly be minimized, regardless of developments in the coal strike.

Where parts suppliers have been physically able to continue operations, they may still be unable to keep going. At Briggs Mfg. Co., for example, bodies being built for Chrysler are piling up so fast that curtailed production will soon become necessary. Packard has already cut one hour from its working day and further curtailment is in prospect.

A great deal depends on the extent to which rail transportation has been hampered. Even with rail traffic lines operating at capacity an immediate response by Detroit industry is doubtful. Employment officials estimate that 500,000 persons were unemployed in Michigan because of the strike.

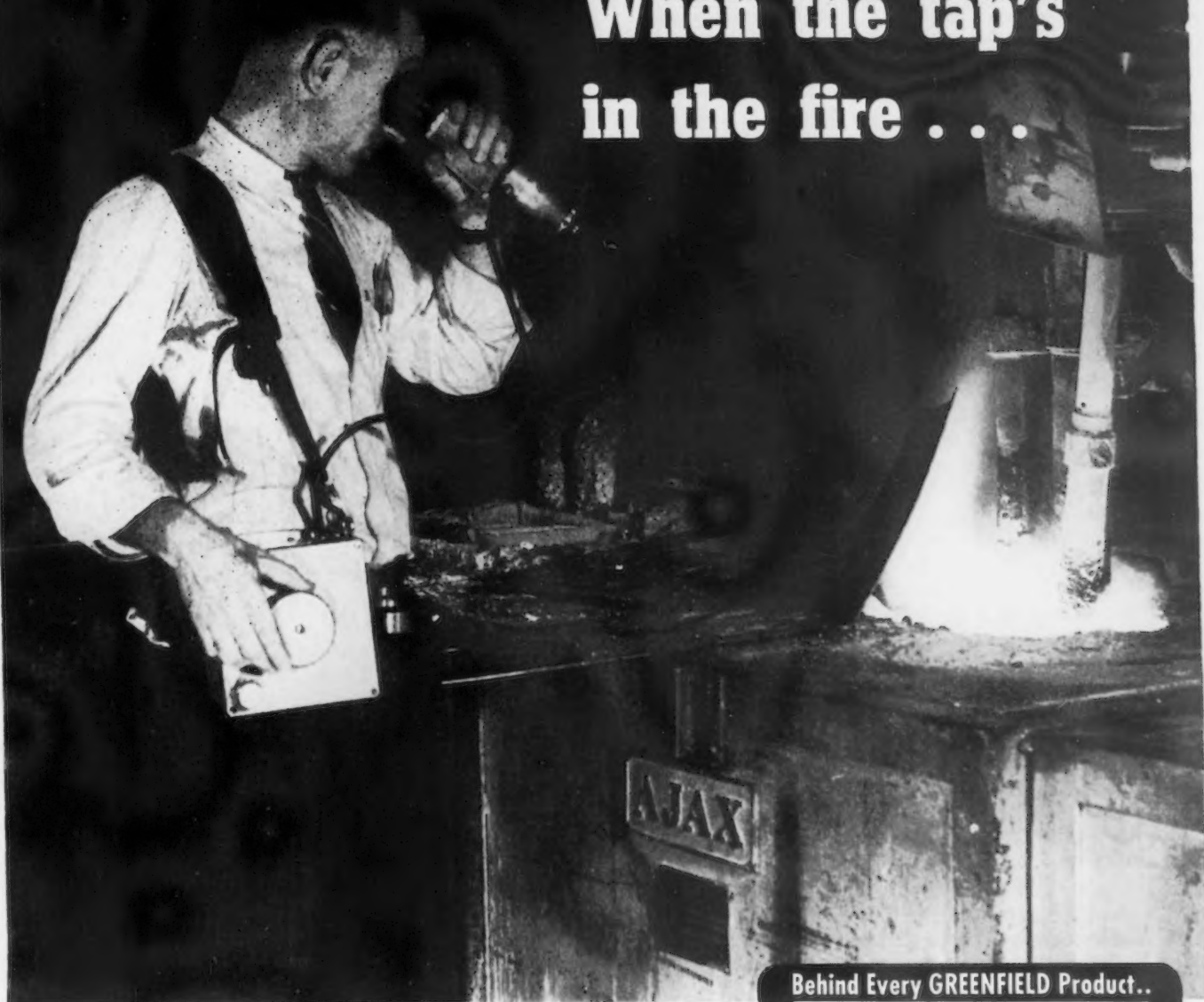
When industrial production in this area is resumed, it is expected that automotive producers will have an unusually difficult time keeping assembly lines rolling. Plant managers have been struggling for

**GLAMOR BOY OF THE DEPARTMENT STORE:** Back in 1900 this steam-driven motor truck was built by the White Motor Co. and sold to the Denver Dry Goods Co. of Denver. The year 1900 marked the real start of motor truck transportation as a means of store-to-home delivery.





When the tap's  
in the fire . . .



This "Greenfield" man is measuring heat with as much precision as though he was using a micrometer to measure size. He is using an optical pyrometer. On his technical skill depends to a large degree the performance of the finished product in your plant. Improved furnaces, precise heat measuring devices, and the continuing accumulation of "know-how" have made the heat treating of tool steels an exact science in "Greenfield" plants.

It is a science that contributes much toward your getting *more for your money* when you use "Greenfield" tools and "Greenfield's" "Show-How" field service.

**GREENFIELD**

GREENFIELD TAP and DIE CORPORATION  
GREENFIELD, MASSACHUSETTS

Behind Every GREENFIELD Product..

LARGEST MANUFACTURING CAPACITY



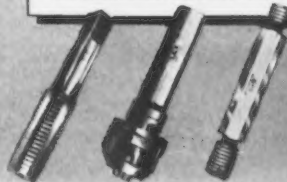
ENGINEERING AND RESEARCH



FIELD SERVICE MEN



LEADING DISTRIBUTORS



many months trying to stretch grossly inadequate banks of parts. With strikes continuing in suppliers' plants—and even growing worse—no improvement in the parts situation is expected. In addition, complete cessation of the parts flow will undoubtedly introduce new problems that did not exist before the strike—the expected jamming of freight depots is an example.

A shipment to Detroit by boat of badly needed steel sheets may relieve that situation temporarily but the automobile industry in recent months has seen so many parts shortages corrected only to be replaced by a more serious parts crisis, that its faith in any single event to alleviate its many dislocations has grown very thin indeed.

**E**NGINEERS in the automobile industry, however, are looking considerably beyond the gloomy present. During the past week, George T. Christopher, president of Packard Motor Car Co., revealed that Packard became the first automobile manufacturer to enter the aircraft jet engine field directly about a year ago when it began experiments at Toledo and Willow Run under an agreement with the Air Materiel Command. The Toledo plant containing 325,984 sq ft of floor space is devoted solely to the development and production of jet aircraft engines.

Commenting on this fact, Mr. Christopher believes that automobiles powered by light, compact gas turbine engines are entirely possible in the industry's "early future." While he does not look for gas turbines in automobiles in the next 5 yr, he does feel we will see them in cars in the next 10 or 15 yr. No comment was offered on the availability of satisfactory metals and refractory materials to produce gas turbines on a production line basis.

It has also been noted that the automobile industry has no intentions of being caught flat-footed when television emerges as an effective advertising medium. Chevrolet will become the first automobile producer to employ live television on a network basis, a series of four commercial television broadcasts having been scheduled in cooperation with the American Broadcasting Co. The programs which will start in the near future will be broadcast on consecutive Tuesday

evenings from the Dumont studios of station WABD in New York City.

Ward's Reports, Inc., estimated that passenger car and truck production for the United States and Canada reached a new high for 1946 during the week ended May 10, totaling 70,225 units. This represents a gain of 3165 as compared with the previous week; the corresponding figure for last year was 17,585.

### Forecast Adequate Rubber Tire Supply

Detroit

• • • An adequate supply of passenger automobile tires to meet the public's summer demand is forecast by R. S. Wilson, vice-president of Goodyear Tire & Rubber Co.

Reconversion of the industry, Mr. Wilson said, will enable it to produce 66 million passenger tires in 1946 as against 50 million in 1941. Goodyear has already built as many passenger tires in the first four months of this year as it did during the first ten months of 1945, Mr. Wilson explained. The rubber industry is now producing automobile tires for passenger cars at the highest rate in its history.

A survey made by Goodyear field engineers in 17 different cities from coast to coast indicated that 41 pct of the tires now on the road are in good condition and should last out the critical period during which tire supply and demand are

coming into balance; 45 pct of the nation's passenger car tires were discovered to be half worn out; only 14 pct of the tires in use had smooth treads and were in need of early replacement.

### Rules Vacations Taken During Layoff Unfair

Detroit

• • • Dr. Harry Shulman, labor umpire between the Ford Motor Co. and the UAW (CIO), has ruled that it is not proper for the company to require employees to take their vacations during a layoff of indeterminate length of time. This ruling reaffirms a decision handed down by the Michigan Unemployment Compensation Commission in a similar case several months ago.

The Ford Motor Co. had previously advised its employees that Ford operations would be shut down for an indeterminate period. It urged employees to take whatever 1946 vacation was due them during the shutdown.

The company had advised its employees of its intention to abide by the contract and umpire rulings with reference thereto. A letter has been sent to Ford employees urging them to take their vacation voluntarily during the shutdown if at all possible, pointing out that when operations are resumed, it is the company's plan to maintain continuous production during the remainder of the calendar year with as little interruption as possible by reason of vacations.

**NEW STUDEBAKER:** The advanced lines of the 1947 Studebaker Commander are aptly shown in this 5-passenger coupe. Note should be taken of the added window space in the rear, extending from the back all the way around to the side post. Bodies have been lowered by moving and dropping the passenger compartment.





Master Collets and Pads, Pushers  
and Solid Collets.  
Photo courtesy National Acme  
Company, Cleveland, Ohio.



TOP QUALITY STEELS for  
TOP QUALITY FABRICATORS

## ARISTOLOY STEELS

When precision and strength must be combined  
—steel made to exact specifications gets the call.

That's why more and more steel fabricators are  
using ARISTOLOY ELECTRIC FURNACE ALLOY  
STEELS. Every heat of ARISTOLOY Steel from  
melting to final finishing operations is carefully  
observed, checked and rechecked. More than two-  
thousand chemical determinations are made every  
twenty-four hours.

Your Copperweld representative will gladly assist  
you in selecting an ARISTOLOY Alloy Steel best  
suited to your needs. If necessary, our traveling  
metallurgists are always available for consultation.

We have the equipment, we have the skill, and  
we carefully guard the reputation we have earned  
in producing TOP QUALITY electric furnace,  
alloy steels.

We invite your inquiries.

STANDARD STRUCTURAL ALLOY STEELS  
MAGNAFLUX - AIRCRAFT QUALITY STEELS  
BEARING QUALITY STEELS • ALLOY TOOL STEELS  
CARBON TOOL STEELS • STAINLESS STEELS  
NITRALLOY STEELS • SPECIALTY STEELS

**COPPERWELD STEEL COMPANY • WARREN, OHIO**

• War and Navy Depts. intensify technical research through cooperation with universities and industry . . . Armed forces join in study of industrial mobilization.



WASHINGTON—The War Dept. has inaugurated a highly integrated postwar program in which particular attention will be given to the "recruitment, retention and improvement in service" of scientific and technical personnel. This move is in line with a recent declaration by Secretary of War Robert P. Patterson of the War Dept.'s policy of "pursuing a vigorous and comprehensive technological program to assure security beyond any question of doubt." Closely related to the program is the Ordnance Dept. announcement that it is depending in peace as well as in war on the active support of American industry, universities and research agencies.

During the war the Ordnance Dept. spent more than \$125 million on basic research and long-range development programs and enlisted the aid of outstanding laboratories of science and industry, as well as scores of universities and colleges. The War Dept. has said that the program paid handsome dividends. New methods of manufacturing, substitutes for critical materials, advanced metallurgy and ballistic tables were a few of the problems successfully solved during the war.

While most of the work was done for military application, the dis-

coveries have been widely adapted to peacetime pursuits. VJ-Day brought a cessation of most of these research contracts. However, the Ordnance Dept. has pointed out that new contracts, involving in some cases different types of research, have since been made with a number of universities, industrial and independent research agencies. More will be given out when the Army's budget figures are compiled and the amount of money available for research becomes known.

It was stated that it has always been the policy of the Ordnance Dept. to use outside facilities as much as possible in order to get the fresh viewpoint of men who are not too close to the problem involved. In some cases, it was declared, problems that seemed impossible of solution have been solved by scientists whose vocabulary did not include the word "impossible."

Under the technological program instituted by the War Dept., planning will be done by the Committee on Scientific Personnel. Reporting directly to the Secretary of War, it is composed of 15 military and civilian research men in the department. The first report has been issued after comprehensive study in the various department components to determine the status of professional personnel.

Administrators as well as scientific and technical experts have been canvassed throughout the department. Recommendations were based upon first-hand information from these operating men. Further studies will be made in such areas as recruitment, selection, retention, classification and wage administration, improvement in service, advancement and recognition of personnel in the professional fields.

"One of the principal lessons learned from the recent war is that the security of our nation depends upon the maintenance of a position of positive leadership in scientific research and development and their timely application to military problems," Secretary Patterson said. "In the current transition period it is necessary for the War Dept. to restate emphatically its policy of pursuing a vigorous and comprehensive technological program to

assure security beyond any question of doubt.

"To this end it is desired that every effort be made to stabilize and integrate research and development programs bearing on national security and to study continuously the conditions and factors that are related to their effective implementation, support and continuity. In the last analysis, the success of the War Dept.'s research and development activities depends on the quality and adequacy of its scientific and technical personnel. It is therefore imperative to give particular attention to the recruitment, retention and improvement in service of such personnel to the end that stabilization and leadership are secured and maintained."

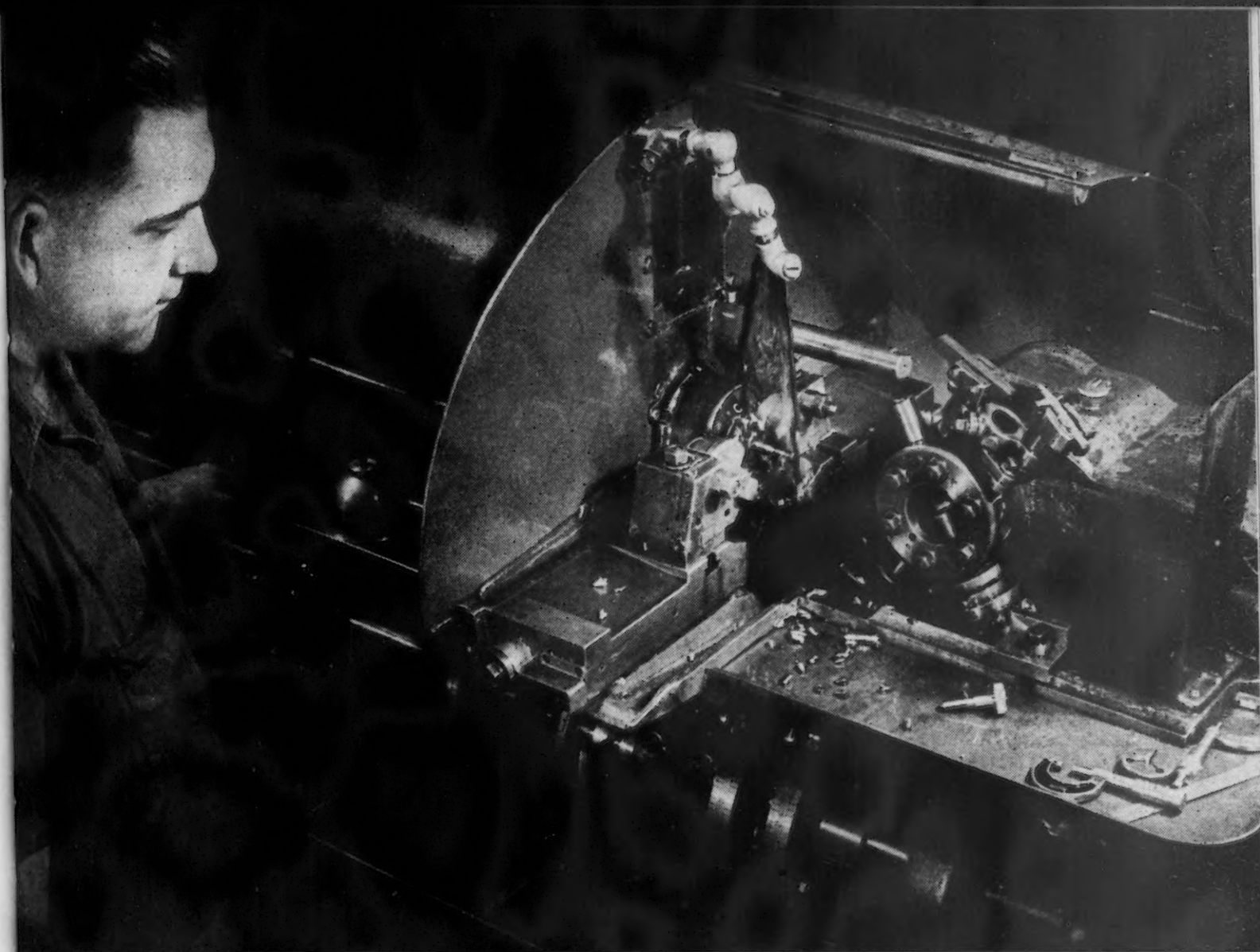
\* \* \*

RECOGNIZING the increasing participation of the Navy in the activities of the institution, the Army Industrial College has been rechristened The Industrial College of Armed Forces, upon the recommendation of a Joint Army-Navy Board headed by John M. Hancock, New York industrial banker. The board was appointed by Secretary of War Robert P. Patterson and Secretary of the Navy James V. Forrestal to study postwar Army and Navy training in industrial mobilization. Brig. Gen. Donald Armstrong, U. S. Army, present commandant, has been designated to continue as commandant of the college with Capt. E. R. Henning, U. S. Navy, and Col. Robert W. Brown, U. S. Army, as assistant commandants.

Other recommendations made by the board include establishing the Industrial College on the same level as the Army and Navy Staff College, now National War College, and the maintenance of close contact with the Army and Navy Munitions Board and the Planning Div. of the Office of the Under Secretary of War and similar agencies in the Navy and Air Force.

Approximately 90 Army and Navy officers with World War II experience in procurement and industrial mobilization are currently studying at the Industrial College classrooms in the Pentagon Bldg.





**STAINLESS STEEL...TOOL LIFE** *Up 400%*

## **SUNICUT...**

**Increases Production from 75 to 380 Pieces per Grind**

A manufacturer of automotive parts formerly obtained from 20 to 75 pieces between tool grinds, and was troubled with high drill-breakage.

**Changing to Sunicut**, for a cutting lubricant, he was able to increase tool life more than four hundred per cent — to 380 pieces per grind. Finish was improved. Here are the facts:

Machine . . . Brown & Sharpe 2-G Automatic

Material . . . Stainless steel

Operations . . . Drilling, reaming, forming, and cutting off

Cutting Lubricant . . . Sunicut

**For heavy cuts at high speeds**, for high accuracy, and satin smooth finish, Sunicut is widely used for many different types of cutting operation.

**Sunicut** is a clear, free-flowing, sulphurized oil produced by an exclusive Sun process. It has high lubricating qualities, is an excellent dispenser of heat. Call the Sun Cutting Oil Engineer near you for full details.

**SUN OIL COMPANY • Philadelphia 3, Pa.**

*Sponsors of the Sunoco News-Voice of the Air—Lowell Thomas*

**SUN**  
  
**SUNOCO**

**INDUSTRIAL  
 PRODUCTS**

The next course will begin Sept. 3 and will continue for 10 months.

\* \* \*

**M**EANWHILE the Navy and the Navy Industrial Assn. have launched a program of intensive training within industry itself for selected naval officers. Under the course which comprehends study in steel and numerous other industries, regular officers will receive four to six months' training in these specialties by being assigned to duty in businesses associated with their Navy work.

As the initial step under this plan, 19 supply corps officers have begun their training in business firms in the Third Naval District, which includes New York, part of Connecticut and part of New Jersey. These officers were selected from specialists in accounting, purchasing, inventory control, transportation and material handling.

The program got underway in New York on May 6 at a meeting of the selected naval officers and representative officials of the companies designated to supervise their training. The meeting was held in the offices of the Navy Industrial Assn., 110 Williams St.

Among officials of companies participating in the program were: J. Frederic Wiese, vice-president, Lu-

kens Co.; William McL. Pomeroy, general traffic manager, Pennsylvania Railroad; T. C. Davis, assistant treasurer, E. I. duPont de Nemours & Co.; C. M. Bloodgood, assistant to the vice-president, Air Reduction Co.; H. L. Erlicher, vice-president, General Electric Co.; J. R. MacDonald, General Cable Corp.; T. D.

Cartledge, vice president, Union Carbide & Carbon Co.; J. J. Evans, Jr., Armstrong Cork Co.; Bruce Wallace, comptroller, Otis Elevator Co.; Norman O. Aeby, general purchasing agent, Johns-Manville Sales Corp.; and S. W. Murkland, comptroller, and D. F. G. Eliot, Western Electric Corp.

### Gregory Quotes Facts And Figures to Deny Harry Byrd's Charges

Washington

• • • Charges by Sen. Harry F. Byrd (Va.) that sale of surplus property has "bogged down" to the point of a "scandal" have been flatly denied by Lt. Gen. Edmund B. Gregory, chairman of War Assets Administration.

Declaring that no effective disposal machinery had been set up as yet, Senator Byrd said that out of \$32 billion of war surplus about \$12 billion worth of civilian type goods could be put on the market immediately to relieve critical shortages.

In the first place, Gregory pointed out in a public statement, total surplus declarations to date amount

to only about \$15 billion, not \$32 billion. The latter figure was the estimated total declarations which it now appears will be \$10 billion less than at first estimated.

Also, he said, only \$2 billion of the total declarations have been consumer goods and one third of these have been disposed of while another third has been in the hands of WAA for 90 days or less.

Official records show that March sales of surplus were 2½ times greater than for December," Gregory asserted. "The steady upward progression is shown in the following sales figures: December, 1945, \$211 million; January, 1946, \$303 million; February, \$412 million; March, \$492 million; and April, about \$600 million.

Coming on the heels of the Byrd charge, the House authorized a committee to investigate the surplus property disposal program. This action brought a statement from Maj. Gen. Glen E. Edgerton, acting War Assets Administrator, that WAA has no fear of a fair appraisal of its work and will cooperate willingly in any investigation the Congress desires to make.

General Edgerton added:

"Broad authority has been given to the Regional Directors to enable them to push sales with increased speed. Personnel has been added, paper work has been reduced, and disposal methods have been improved. Site sales have been increased in number and scope, releasing millions of dollars' worth of surplus property for sale in the most economical and expeditious manner permitted by the Surplus Property Act. Sales have mounted continuously each month, and still higher rates are in prospect.

"There is much misunderstanding of the difficulties of surplus property problems, and even more misunderstanding of the progress that has been made in their solution. Another investigation may help to dispel current misapprehensions."

### THE BULL OF THE WOODS

BY J. R. WILLIAMS



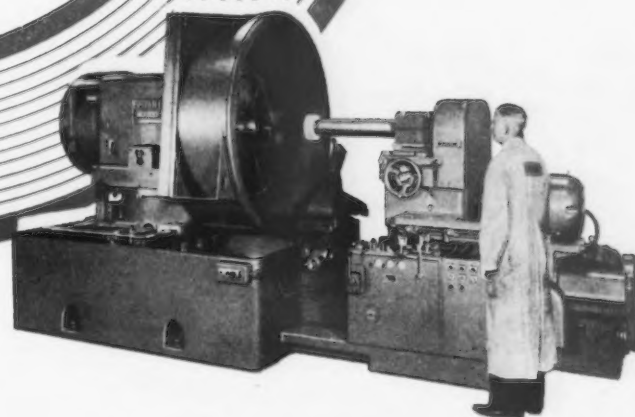




### Another Bryant Postwar Development

The NEW Bryant No. 150 is a giant "internal grinder" with typical Bryant "fingertip" control. It retains the famous Bryant feature of three-point wheel slide suspension which is the basis of Bryant's reputation for high production of accurate work with fine finish.

The NEW Bryant No. 150 has a preloaded anti-friction cross slide, assuring smooth cross feed operation in spite of the size of the machine. Both hand and power cross feed are available and in addition, a hydraulic cylinder slides the wheel spindle to the rear to provide ample access for work loading or checking.



The work spindle is bored out to accommodate spindles or other long work which may be chucked conveniently by extension through the work spindle. The work spindle is designed so that chucks or fixtures may be mounted on either or both ends.

The NEW Bryant No. 150 will handle bore or bore & face grinding in a single chucking, and bores may be either straight or tapered. Write for a copy of the new catalog sheet which gives full details, capacities and dimensions.

If your internal grinding work comes within the range of  $\frac{1}{16}$  inch diameter bore up to 60" diameter swing, it will pay you to

**Send for the Man from Bryant!**

# BRYANT



**BRYANT CHUCKING GRINDER CO.**

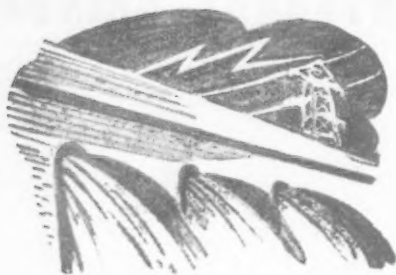
SPRINGFIELD, VERMONT, U. S. A.

THE IRON AGE, May 16, 1946—73

# West Coast . . .

ROBERT T. REINHARDT

• Water power and oil reserves reduce effect of coal strike in West . . . The corporation favored as Geneva bidder . . . New propeller may revolutionize ship propulsion.



**S**AN FRANCISCO—Millions of acre-feet of water impounded behind scores of dams and millions of barrels of oil lying in reservoirs beneath the earth's crust can flood the West with sufficient power at least to maintain its own economy, if not extend a helping hand to the remainder of the country strangled in the black grip of a coal strike. That is the opinion of leading industrialists who, while faced with problems common to the country as a whole, give thanks for the natural resources so abundant in their area of operations.

Actual industrial operations in the West have not been affected to the extent that they have in the Middle West and East because of the local dependence on electric power and oil fuel. For example, the ingot rate on the Coast has dropped only 6 pct because of the strike which is far less than the national average. Of course, this low production loss is attributable to the heavy scrap charge customarily used in the area and the large reserve stocks of pig iron maintained by local producers. Another two weeks of the coal shortage would result in serious production cuts because pig reserves are about depleted.

Aside from the steel industry the most serious effects of the coal

shortage would probably be in the agricultural field because of the inability of shippers to get cars returned from the East on coal burning lines. Western railroads, of course, operate almost entirely on oil and can deliver the fruit and vegetables produced out here to eastern points even under a railroad embargo, but refrigerator cars can't be returned by the coal burning lines of the East.

However, automobile assembly plants and other fabricators dependent on parts from the East are at the mercy of the coal miners and the sympathetic, or at least, tolerant attitude, which many manufacturers might have held for the miners has disappeared and in its stead there has developed a strong resentment against the miners, the mine operators and the government for allowing the situation to develop into a national crisis.

Added to the burdens of western steel distributors last week was the elimination of the price provision which permitted them to add rail freight to their selling costs and instead allows them to sell only on a rail and water rate. Warehousemen and others are complaining that this ruling reduces still further their spread of profit which already has been cut by increased labor costs. This new order means that selling prices on the coast will revert to April 1941 figures regardless of how the material is brought here. The allowance of rail freight in selling costs was made by OPA because no boats were bringing materials west and the apparent assumption is that now such shipments can be made. This ruling affects plates, hot and cold-rolled sheets, bars, galvanized sheets, strip, structurals, hard red sheets, billets and pipe and tubular products.

**T**HE steel shortage has begun to affect another phase of western industry. Apparently a serious shortage of bale ties or baling wire exists which threatens to cause heavy loss of hay in the west. Western producers of this essential material are working three turns but are still a year behind on orders. The shortage is blamed on the steel strike and the

OPA which, it is claimed, failed to allow a sufficient price rise on this material to make it a profitable item. So scarce is this material that one central California dealer who usually sells four or five cars a year has received only one car this year for which he was offered \$500 over the ceiling. Dan McKinney of the California Cattle-men's Assn. has appealed to Washington for help claiming that unless some relief is obtained immediately a large portion of the western hay crop will be ruined with a resultant loss of feed to cattle.

The Office of Price Administration was thoroughly belabored from another angle last week when Robert R. Wason, president of the National Assn. of Manufacturers and president of Manning, Maxwell & Moore, Inc., addressed the regional meeting of NAM last week. Before a sympathetic audience he stated, "because OPA is holding down production, it is, of itself, one of the most powerful and dangerous inflationary forces in this country today." Earlier the same day that Mr. Wason spoke, 100 pickets of the seven maritime unions holding a convention in this city had taken the opportunity to show their disapproval of NAM's stand on OPA by parading in front of the hotel where the regional NAM meeting was being held. Placards most prominently displayed stated, "NAM Wants to Murder OPA."

The maritime unions in convention voted to strike June 15 tying up all shipping on the East and West Coasts, Gulf Ports and the Great Lakes unless demands for higher wages and better working conditions were met before that date. It was agreed that each of the seven unions must have a satisfactory contract by the deadline date or all of the unions would "hit the bricks."

Bethlehem Pacific Coast Steel Corp. has put into operation its remodeled 12-in. merchant mill which, it is stated, will cut production costs, increase safety and eventually result in increased earnings for workmen. The principal improvement is the use of driven roll conveyors for mechanically moving the hot steel bars into the mill and equipment for transfer-



# More Speed... LONGER DRILL LIFE WITH CONTINENTAL'S *New* DRILL CHIP BREAKER

● Faster drilling action and prolonged tool life are but two of many advantages obtained with the Continental Drill Chip Breaker. By breaking chips into small, uniform pieces that are easily carried up the flutes of the drill, clogging is eliminated. The unit can be used vertically, horizontally, or at any angle as long as the housing can be kept stationary while the drill rotates. The arm prevents rotation of the housing. Where space permits, the Continental Drill Chip Breaker can be used in multiple spindle heads. Write for Continental Bulletin 28161 today for sizes and complete specifications.

## YOU PROFIT 7 WAYS WITH CONTINENTAL'S DRILL CHIP BREAKER

- 1 • **GREATER SPEED**—Because there is no clogging, it is not necessary to withdraw the drill to clear chips from the hole.
- 2 • **PROLONGED TOOL LIFE**—The free cutting action results in more holes being drilled before sharpening is necessary.
- 3 • **BETTER FINISH ON HOLES**—Holes are round, straight, and smooth. The short chips travel up the drill flutes without scratching or clogging.
- 4 • **DEEPER HOLES**—It is possible to drill holes many diameters deeper, eliminating the necessity of withdrawing the drill from hole to relieve chips.
- 5 • **AUTOMATIC FEED**—Automatic feed can be used without the danger of drill breakage that so often results from chip-clogged holes.
- 6 • **GREATER SAFETY**—There are no long, whirling, spiral chips to burn hands or cut fingers.
- 7 • **CLEANER OPERATION**—Coolant penetrates easily to the very point of the drill; the short chips do not splash it on machine or operator.



Above: With the Continental Drill Chip Breaker, the chip is broken at regular intervals. Small loose chips are easily carried up the flutes. Holes are straighter, rounder, and have better wall finish.

Left: With conventional drilling, solid chips pack the drill flutes, causing scratched, out-of-round, and crooked holes. The drill must be withdrawn repeatedly to clear flutes and avoid drill breakage.



**CONTINENTAL TOOL WORKS**  
DIVISION OF EX-CELL-O CORPORATION  
1200 OAKMAN BOULEVARD • DETROIT 6, MICHIGAN

ring the heavy bars from one roll stand to another. Manpower requirements have been reduced on the 12-in. mill to the point where enough men can be moved to the 9-in. mill so that the latter can operate two 8 hr turns a day.

\* \* \*

**L**OS ANGELES—In evaluating the bids received for the Geneva steel plant, the War Assets Administration has another factor to consider—the wishes of the 100 chambers of commerce represented by the Western States Council. The substance of the following letter has been sent to all members of the Council, congressmen, senators, governors of the 11 western states and to the WAA by Harold W. Wright, general manager of the Los Angeles Chamber of Commerce:

"Throwing its support behind the bid of the U. S. Steel Corp. for the government's Geneva, Utah, mill, the Western States Council, representing 100 chambers of commerce in the 11 western states, informed the WAA of its recommendation that the bid be accepted. The bid, offered on behalf of U. S. Steel's western subsidiary, Columbia Steel Co., was selected by the Council's Steel Committee at a meeting last week. The statement was presented to WAA by committee chairman K. T. Norris, president of the Norris Stamping & Mfg. Co.

"The Committee expressed its belief that the acceptance of the U. S. Steel bid would do most to aid western industrial development, and would dispose of the plant in

accordance with the soundest possible policy of turning over government-built mills to private ownership without the necessity of subsidies. The analysis of other bids brought out several aspects in which they fell short of the U. S. Steel bid. Major objections to other bids included lack of operating organizations, requirements for additional government investment of loans, lower actual cash offers than the recommended bid and lack of clarity of some of the proposals.

"One of the principal factors leading to the Committee's recommendation of the Columbia Steel bid was the company's product pricing policy statement. The bidder stated that products sold to the public would be priced on the basis of a Geneva basing point."

\* \* \*

**S**EATTLE—This was an important week in the Northwest for two men—one a pioneer who has been plugging away for 25 yr to get the country to recognize his invention and the other is a youngster just starting out and whose luck in running much better.

To Professor F. K. Kirsten success was a little cold. He stood with a group of Navy officials and newspapermen by Bremerton's Washington Narrows and watched them exclaim in amazement as a 900-ton landing ship whirled dizzily about. It was cavorting in this unusual manner because of something he had tried without success to sell to the Navy 25 yr ago—a cycloidal propeller.

The revolutionary propeller caus-

ed the ship to literally spin around in making turns with the bow as the pivot. The ship crabbed sideways without ahead or astern movement and it was brought to a dead stop from 14½ knots within her own length.

The propellers consist of twin motors 7 ft in diam, each of which is equipped with six vertical blades revolving about their own axes as the rotors revolve. Flush with the hull, the blades projecting straight downward, the propeller functions as the ship's rudder. It is connected with the drive shaft by a right-angle beveled gear drive.

Mr. Kirsten reports that he got the theory for the propeller in 1920 as he watched a bird in flight and that the basic principle is much the same as that applying in sculling a boat.

The test prepeller was designed and built by the Pacific Car & Foundry Co. which has exclusive manufacturing rights under Mr. Kirsten's patent. The company is forecasting the day when tugs, barges, ferry boats and all big ships will be using this propeller which is said to increase the ship's efficiency 25 pct above that obtainable with the conventional propeller.

University of Washington is carrying on experiments with the Kirsten propeller on airplanes. Several models are undergoing wind tunnel tests.

The other Northwesterner to whom success came this past week is Donald Wheeler, a former Boeing engineer who designed a small, four-passenger, low-wing pusher plane. With a few engineers he started Puget Pacific Planes in Tacoma, Wash., and has just been awarded a contract for 1600 planes by a French company at a total price of \$6 million. The order calls for delivery of the planes in major assembly form and assembly will be completed in France. The planes will be re-sold in France, North Africa, Madagascar and Indo-China. The distribution firm will be the Societe d'Etudes d'Aviation et Derives with headquarters in Paris. Delivery is to start in November and is to be completed in 5 yr.

Mr. Wheeler is still in his 20's and won fame as an aircraft designer when he received an award of \$1000 first prize in a national contest.

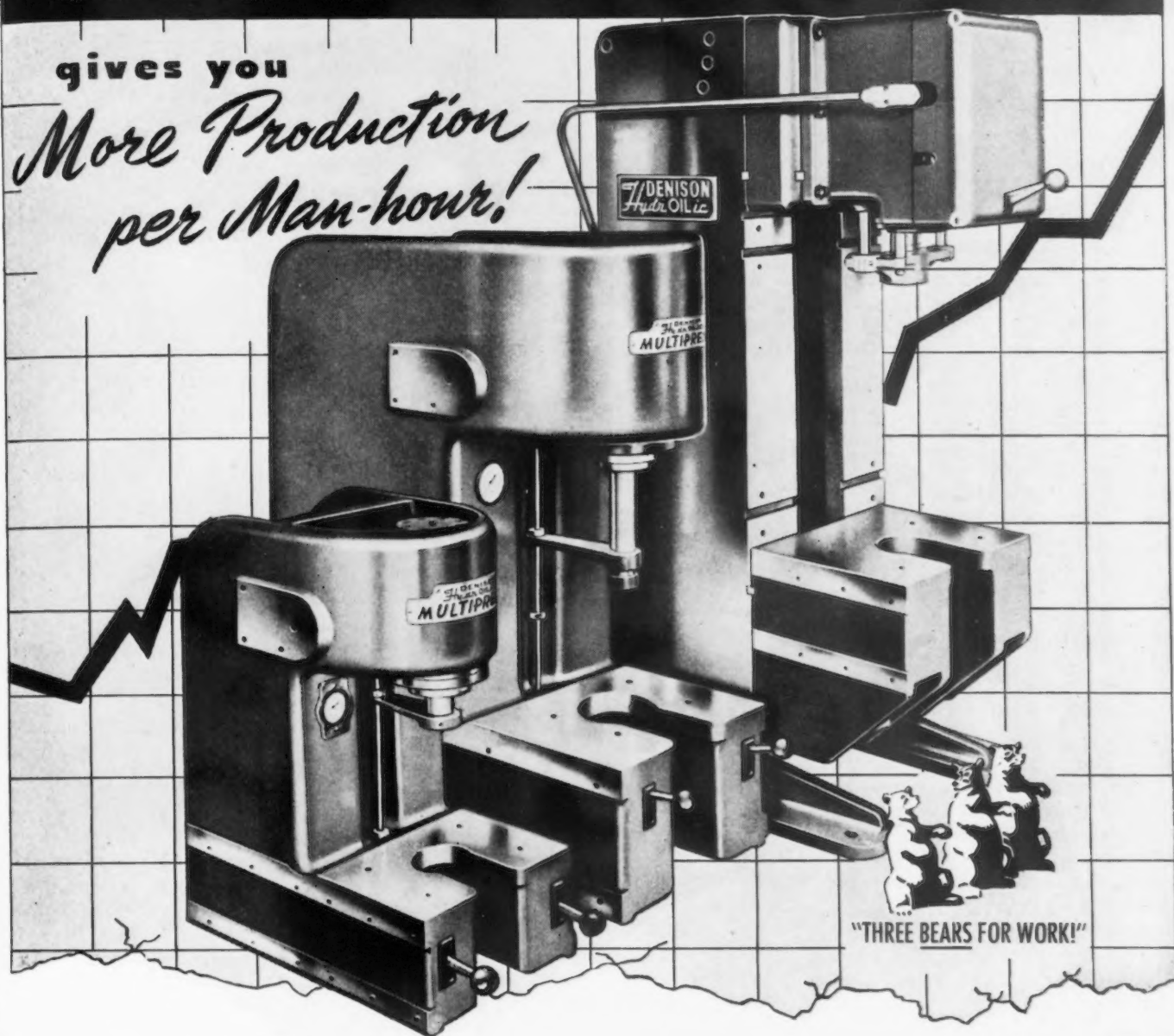
**REVAMPED FOR ACTION:** Here is Bethlehem Pacific's revamped 12-in. mill in operation at the company's South San Francisco plant. Mechanical improvements have been made to speed up production and to fit into Bethlehem's West Coast sales policy.





# MULTIPRESS

**gives you**  
*More Production  
per Man-hour!*



"THREE BEARS FOR WORK!"

NEVER BEFORE has such fully controlled power been made so easy to adapt to so many operations! MULTIPRESS advantages are daily pointing the way to "more production per man hour" on hundreds of installations.

The amazingly compact MULTIPRESS in front is available in four- and six-ton capacities. The center unit provides pressures up to eight tons. In the rear is an assembly of the ingenious MULTI-UNITS, which offer MULTIPRESS performance in self-contained components that give you exceptional latitude in arranging your own press design or tooling setups.

In addition, an extremely wide variety of standard, job-proved tooling accessories extend MULTIPRESS efficiency to countless specialized operations.

No matter how you're handling pressure-application jobs within the eight-ton range—no matter how different your needs may seem—MULTIPRESS may have production-boosting surprises in store for you. Write for information!



**DENISON**  
EQUIPMENT IN APPLIED  
*Hydro-Oilic*

THE DENISON ENGINEERING CO., 1158 DUBLIN RD., COLUMBUS 16, OHIO

THE IRON AGE, May 16, 1946—77

# European Letter . . . JACK R. HIGHT

• British Socialist lauds nationalization progress in Czechoslovakia . . . Workers try taking their share of plant home with them at night.



LONDON—Lord Strabolgi, British Socialist and owner of large industrial interests, paints an enthusiastic picture of the progress that is being made in the nationalization of Czech industry. He has just returned from a visit to Prague and to Pilsen, where the largest unit of the Skoda combine is located.

A shortage of skilled labor is the most serious problem facing the nationalized heavy industries in his opinion, due largely to the death of thousands of Czech workers during the war, the expatriation of Sudetenland and other Germans, and the death of Jews who were skilled in clerical and managerial occupations.

This converted aristocrat feels, however, that the enthusiasm of the remaining workers for their jobs, now that they own the works, will make up for the losses in due time. According to Lord Strabolgi, Russian interference in Czech commercial affairs is a myth, actually Czech industries carry on their businesses without any Russian influence. When transactions take place with the Russians, as in the case of recent purchases of Krivoi Rog iron ore, they are on a strictly commercial plane.

The Skoda works at Pilsen, which he visited on his trip, employ 18,000 people today, in comparison with 23,000 before the war. Many of these are women, doing most of the

light jobs, including crane operation in the steel plant.

The efficiency of the 18,000 is being impaired by the restrictive diet, which has wound up 6 yr under the Nazi heel with a present level of 1800 calories.

Far below what is considered essential for a heavy laborer, the effect can be seen on the individual worker. Despite this drain, Lord Strabolgi brings high praise for the present tempo of operations, "In my experience of seeing steel operations in England, Australia, America, South Africa, France, Italy, and Germany, never have I seen such a fast pace."

The new sensation of being part owner was taken seriously by some of the workers when nationalization was announced, who felt more secure in taking their share home at night in the form of tools, but that practice has been halted. The workers have now elected company police from among their own numbers, with power of life and death. Their orders are to shoot looters, if necessary.

Wage scales in the nationalized Skoda works average the equivalent of about 33c. an hr, with skilled workers making as high as 60c. an hr. Women get the same pay as men for the same work. Payment is wherever possible on a piecework basis.

The board which manages the Skoda plant under government ownership includes what Lord Strabolgi calls technical men in distinction to the prewar managers, many of whom were unfamiliar with actual steel operations. Also present are workers' representatives, but an outstanding idea of their function is the fact that they do not participate in managerial decisions in regard to technical and production matters; their interest is in what would in America be considered personnel problems, wages, hours, welfare, insurance and conditions of work.

THE union in the Skoda works told the British industrialist that nationalization makes the strike weapon obsolete. They met his statement, that the reverse would be true in the United Kingdom, with great surprise. They consider such a situation to be im-



LORD STRABOLGI: British industrialist and Socialist, just returned to London from a tour of the nationalized Skoda manufacturing plant at Pilsen, in Czechoslovakia.

possible as they would be simply striking against themselves.

One of the most important men in the Skoda works today is the chief shop steward. His job under the new regime is to patrol the shops, seeing that the men do their full measure of work. Lord Strabolgi is emphatic in his opinion that the chief steward performs this task skillfully. The English Socialist cites this Communist union chief as concrete proof that Left elements are cooperating in the operation of the works.

Technicians are now being paid higher salaries in all of the nationalized industries than they were in prewar days. Above the individual works boards is an industry group made up of technical experts known as the Metallurgical Board. Its function is to buy and sell all of the products of the industries.

Emphasis is laid in all Czech industry on the rehabilitation of transport. Locomotive and freight car production as well as automotive is being pushed ahead at the Skoda plant. Considerable effort is being expended on agricultural



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## LESSON IN *metal* ARITHMETIC!



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Reinforcing Bars . . . also APS Plasteel Roofing • Bates Open Steel Flooring • Thorn Steel Windows

THE IRON AGE, May 16, 1946—79

equipment, particularly tractors.

As the land reforms instituted since the war prevent any farmer from owning more than 50 acres of land, the tractors will be used on a cooperative basis. The great manpower losses will leave farms in serious difficulties until a revolutionary mechanization can be introduced.

Lord Strabolgi states that production at Pilsen also includes motorcars, with a touring car and trucks both in production. He states that 300 cars are to be shipped to South Africa this month. Heavy forgings are also in production for Swedish shipyards. Virtually no munitions are in production in Czechoslovakia except for some rifles for the Army. He states that large numbers of partially finished heavy guns can be seen in many of the scrap heaps.

Czechoslovakia today has some coal, but is in great need of high grade iron ores. Strenuous efforts are being made to import Swedish ore, but transport problems are formidable. Every ton of it must be handled through Baltic ports, and passage through Poland is very difficult. Czechs call the Poles obstructionists; Lord Strabolgi believes the difficulties are due to Polish demands for Teschen, rich coal producing area.

Shipments of Krivoi Rog ore previously mentioned have helped, but the movement is an expensive one. The journey through Odessa and the Danube is a difficult one under present conditions.

Imports or exports of any type through Germany are almost impossible, but the Czechs are persisting in their efforts. Exports by road are actually going as far as Hamburg and Danzig. American authorities demand payment in dollars for activity in their own zone, and the British in turn require sterling for shipping charges in their zone. As is true all over Europe, demanding dollars from Czechs is today's version of trying for blood from a turnip.

**N**O. 1 question of the current Czech picture is, why nationalize? Lord Strabolgi's answer is that the step was inevitable. His explanation is that a revolution is taking place. Because of their activities during the years of German occupation, most of the bankers and employers had to leave their positions. Following the departure of

the Germans and the collaborators there was a huge gap left in the managerial ranks that could only be filled by the state.

Today's result is 75 per cent nationalization in the metallurgical industries, including all of the large production units. The decision on what units to take over and what to leave in private hands was approached from the standpoint of size.

Foreign shareholders in the industries are to be compensated for their holdings, but they will be paid in kroner, rather than in foreign currencies. Most substantial inter-

ests affected are British in the metallurgical fields in particular, and the Netherlands in margarine. French holdings were also substantial before the war, but the Germans took over most French shares.

In addition to the very large German holdings developed under the complex Nazi financial structure, there was considerable Austrian activity in this field. The existence of large holdings in such hands simplified the task of compensation. Hermann Goering's large acquired interest in the Skoda works left only an obvious answer insofar as those shares were concerned.

### **Steel Co. of Canada Expects Cold Mill To Operate by Year's End**

*Montreal*

••• To meet the increasing demands in Canada for flat-rolled steel products, the Steel Co. of Canada Ltd. of Hamilton planned, just prior to the outbreak of war, to substantially enlarge its activities in this field. This project had been designed for an annual total capacity of 650,000 tons.

Conditions brought about by the war forced a change in the company's original program. Instead of carrying out the work as a single undertaking, difficulties encountered in securing equipment compelled a three-stage plan. The first step in the project was the construction of the 110-in., four-high heavy plate mill, started in 1940 and completed in the spring of 1941. The second stage was placed in operation at the end of 1945. This involved the construction of a six-stand, four-high 56-in. hot strip mill. The last stage of the project will be the cold mill which is expected to be in operation toward the end of this year.

The cold mill building 100x1550 ft will parallel the hot mill finishing building. Railroad cars will enter one end of the building on a depressed track.

A continuous pickling line containing four 60-ft long tanks, entrance and exit conveyors, uncoiler, shears, stitchers, pinch rolls and recoiler, is located in one end of this building opposite the hot strip finishing department. An extension to the coil conveyor will bring coils from the coilers in the

hot mill to a storage area opposite the continuous pickling line.

A five-stand 20x53x54 in. four-high cold reduction mill for sheets and tinplate will follow the continuous pickling machine. An electrolytic cleaning line located in a 50x225 ft building forming a lean-to to the main building will be provided for processing sheets from the cold reduction mill. One sheet shearing unit including a payoff reel, side trimmer with scrap chopper, flying shear, belt conveyor and piler, will be installed with provision made for a second unit to be added later.

The annealing department will be 500 ft long, will be located in one end of the cold mill building. Twelve radiant tube annealing furnaces will be used for annealing the product of this mill in either coil or sheet form. Each heating cover will serve three bases. The furnaces will be automatically controlled by pyrometers with thermocouples located in the charge.

The cold strip finishing building 100x800 ft will be served by one 25-15 ton crane. Shipping facilities will be available at one end of the building where railroad cars enter on a depressed track. A loading dock for trucks will also be provided. The finishing equipment will include a two-stand, four-high, 18x42½x48 in. skin pass mill, two 2-high temper mills, roller leveller, oiling machine, slitter, resquaring shear, stretcher leveller, and two tinplate shearing lines. A trimming and recoiling unit and an electrolytic tinning line will be located in a 80x275-ft building alongside the cold strip finishing building.





*this*

IS NO LAUGHING MATTER

**W**E fully appreciate the seriousness of the unprecedented conditions in the steel markets . . . how urgent the need is for Cold Rolled Strip, Silicon Steels and other Follansbee products. We are very

grateful to our customers for their considerate understanding of our inability to meet all demands.

We can only report that, during those periods when operations have been possible, our production has been far beyond rated capacities. And we promise that every effort will continue to be made to produce every possible ton of Follansbee steel.

## FOLLANSBEE STEEL CORPORATION

*Sales Offices*—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee.

*Sales Agents*—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada.

*Plants*—Follansbee, W. Va., and Toronto, Ohio

*Warehouses*—Pittsburgh, Pa., and Rochester, N. Y.

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COLD ROLLED STRIP • ELECTRICAL SHEETS & STRIP • CLAD METALS  
POLISHED BLUE SHEETS • SEAMLESS TERNE ROLL ROOFING

THE IRON AGE, May 16, 1946—81



**CARL A. TEN HOOPEN**, eastern district sales manager, Cyclone Fence Div., American Steel & Wire Co.

• **Carl A. Ten Hoopen** has been appointed eastern district sales manager of the Cyclone Fence Div. of American Steel & Wire Co., Cleveland. Mr. Ten Hoopen, whose new headquarters are in Newark, N. J., has been sales manager of the Cyclone central district for the past 12 yr. He succeeds **S. W. Burr**, who will handle special sales assignments for the company. **Thomas S. Humrickhouse** succeeds Mr. Ten Hoopen as manager at Cleveland. Mr. Humrickhouse was manager of the Cyclone office in Pittsburgh for 17 yr, and since 1942, assistant eastern district manager at Newark. **E. B. Wilhelm** has been named manager of the newly established Michigan sales district of the Cyclone Fence Div. with headquarters in Detroit.

• **Henry D. Stecher**, formerly president and general manager of the Romec Pump Co., Elyria, Ohio, has become president of the Adalet Mfg. Co., Cleveland, which firm has recently come under new management. **J. C. Boyton**, founder of the Adalet Mfg. Co., will continue his active association with the firm as vice-president. **George J. Hales** has been made sales manager and **Robert F. Deucher**, factory manager.

• **Raymond Cadura** has been appointed European representative for the Gisholt Machine Co., Madison, Wis., and will make his headquarters in Brussels.

## PERSONALS

• • •

• **R. W. Clansky**, formerly vice-president and treasurer, has been elected president of Standard Forgings Corp., Chicago. **James A. Cook**, formerly vice-president in charge of sales, becomes executive vice-president, and **A. M. Olson**, treasurer and assistant secretary. **G. D. Bassett** will be vice-president in charge of purchasing.

• **Rodney Pennoyer** has been elected vice-president and director, and **Frank J. Sheldon**, assistant treasurer and controller, of Hyman-Michaels Co., Chicago. **Sidney Kelter** has been named St. Louis manager.

• **Kenneth W. Browning** has been named sales promotion manager of the Heating Equipment Div., Rheem Mfg. Co., New York, with headquarters in Chicago.

• **G. A. Sabin**, advertising manager of the Colorado division of Colorado Fuel & Iron Corp., Denver, has been appointed director of advertising for the entire corporation, including all divisions and subsidiaries. Mr. Sabin joined CF&I in 1926 on the sales promotion staff in the field division, later becoming assistant manager of advertising and, in 1931, manager.

• **Irving C. Maust** has been appointed to the West Coast sales engineering staff of Foote Bros. Gear & Machine Corp., Chicago, and will be located in Pasadena, Calif. For a number of years he had been associated with the Lockheed Aircraft Corp.

• **Tom J. Peters** has been appointed division superintendent of maintenance at the South Chicago plant of Carnegie-Illinois Steel Corp., succeeding **John S. Townsend**, who has resigned. Mr. Peters has been associated with the corporation's South Chicago plant for the past 16 yr.

• **Dr. John F. Gall** has been appointed assistant research supervisor of the Research Div. of Pennsylvania Salt Mfg. Co.'s research & development dept., Wyndmoor, Pa.

• **W. A. Maier** has been made director of purchases of the M. A. Hanna Co., Cleveland. For the past 4 yr Mr. Maier has been serving the company in a number of special assignments connected with the war effort. **Morris A. Bradley** will be assistant director of purchases.

• **D. O. Bayless** has been named special factory service engineer for southwestern United States by Edward Valves, Inc., East Chicago, Ind. His headquarters will be in Houston.



**CHARLES W. PERELLE**, president, Gar Wood Industries, Inc.

• **Charles W. Perelle**, formerly vice-president in charge of manufacturing of Consolidated-Vultee Aircraft Corp., has been elected president of Gar Wood Industries, Inc., Detroit. He succeeds **Glen A. Bassett**, retired. Mr. Perelle entered the aviation industry in 1930 and joined Vultee in 1940 as general superintendent.

• **N. E. Meyer** has been named sales engineer of the Wilson-Snyder Mfg. Div. of Oil Well Supply Co., U. S. Steel subsidiary, and will have charge of the division office in New York. Mr. Meyer joined the Wilson-Snyder organization 18 yr ago, and has served in various capacities in the manufacturing, order and sales depts. at the plant's home offices in Brad-dock, Pa.



## NEWS OF INDUSTRY

• **L. K. Burwell** has been appointed treasurer and general manager, Eastern Machine Screw Corp., New Haven, Conn., and **John Rogers**, assistant treasurer and purchasing agent. **Thomas W. Higgins** has become secretary and **Elizabeth J. Farrell**, assistant secretary.

• **Philip G. Nase** has been appointed to the New Jersey territory of Advance Pressure Castings, Inc., Brooklyn. He will work out of his Caldwell, N. J., headquarters.

• **Howard J. Barber** has been appointed by U. S. Reduction Co., East Chicago, Ind., as Michigan representative, with offices in Detroit. **Orville C. Wheeler** has been appointed representative in the Missouri-Kansas-Texas territory with headquarters in St. Louis.



**JAMES L. FEE**, manager of industrial relations, Bethlehem Pacific Coast Steel Corp.

• **James L. Fee** has been appointed manager of industrial relations for all of Bethlehem Pacific Coast Steel Corp.'s operations. Mr. Fee continues as assistant to T. S. Clingan, vice-president in charge of mill operations. He will maintain his headquarters at the South San Francisco plant.

• **Walter Schuknecht**, who has been with the Eastman Mfg. Co., Manitowoc, Wis., for 16 yr, has been elected president.

• **R. W. Stueve** has been named general supervisor of labor relations of American Car & Foundry Co., New York. He was first employed by ACF as a clerk in the auditing dept. at the St. Louis office, and subsequently transferred to the Auditing Div. of the New York office and has steadily progressed in that department.

• **A. C. Wimmer**, treasurer of Oil Well Supply Co., Dallas, Tex., U. S. Steel subsidiary, has resigned, following 30 yr association with the company. Mr. Wimmer is succeeded by **G. F. Goetsinger**, assistant treasurer.

• **R. M. Wilson, Jr.** has joined the technical service section of the Development & Research Div., International Nickel Co., Inc., at New York, as a welding engineer. He was formerly welding engineer at the Bloomfield, N. J., works of the General Electric Co.

• **Robert E. Holmes** has been appointed divisional export manager for Monsanto Chemical Co. at Everett, Mass. **Roy T. Cowing**, formerly salesman for Chicago succeeds Mr. Holmes at Philadelphia and **Ralph E. Nelson**, formerly divisional export manager at Everett will cover the Chicago area.

• **Benjamin O'Shea** has retired as chairman of the board of directors of Union Carbide & Carbon Corp., New York. He will continue as a director and a member of the executive committee.

• **Norman R. Ekholm** has been appointed abrasive engineer for the Pacific northwest by Norton Co., Worcester, Mass. His headquarters will be in Seattle and he replaces **J. E. Strachan** who takes over sales engineering work in the Worcester office. Mr. Ekholm has been with Norton Co. for over 11 yr in the research laboratories and sales engineering work.

• **W. J. Stanton** will succeed **Boyd Watson**, retired, as district manager of the New York office of the Spang-Chalfant Div. of National Supply Co., Pittsburgh. Mr. Stanton was the company's liaison representative in Washington from 1941 throughout the war. Prior to joining the Spang-Chalfant organization 14 yr ago, Mr. Stanton was with the General Electric Co.

• **Dr. Jan Teppema** has joined International Plastic Corp., Morristown, N. J., as director of laboratory operations. Since 1943, Dr. Teppema has been chief chemist of the B-B Chemical Co., Cambridge, Mass.

• **R. B. Willett** has been appointed personnel manager of Goodyear Tire & Rubber Co.'s new tire and mechanical goods plant in Uitenhage, South Africa, which will open early next winter.

• **Charles T. Thum**, who served during World War II as petroleum containers coordinator for the Army-Navy Petroleum Board, has been named chief industrial engineer at the Ansco Div. of General Aniline & Film Corp., New York.

• **Norman E. Thompson** has been appointed production manager for all plants of Rheem Mfg. Co., with his headquarters in New York. Mr. Thompson joined Rheem in 1943 as assistant manager for the Chicago plants and later was made production manager for the eastern division. Previously he had been connected with Republic Steel Corp.

• **Arthur A. Cambria**, chief engineer with the LaPointe Machine Tool Co. for the past 8 yr, has been appointed New England district manager for the U. S. Broach Co., Detroit. The district office is at Shrewsbury, Mass.

**ARTHUR A. CAMBRIA**, New England district manager, U. S. Broach Co.





**FERDINAND W. ROEBLING, III**, vice-president in charge of engineering, John A. Roebling's Sons Co.

• **Ferdinand W. Roebling, III**, has been appointed vice-president in charge of engineering of John A. Roebling's Sons Co., Trenton, N. J. He succeeds **Charles M. Jones**, who has become vice-president in charge of public and industrial relations. Both men are on the company's board of directors.

• **Burton F. Stauffer**, in the rubber industry since 1893, has retired as president and general manager of American Anode, Inc., Akron, Ohio, affiliate of the B. F. Goodrich Co., and is succeeded by **Dr. Robert V. Yohe**, vice-president of the company.

• **David H. Merritt**, recently discharged from army service, has been appointed district manager of the Birmingham, Ala., office of the Ray-O-Vac Co., Madison, Wis.

• **A. E. Fredenberg**, former branch division manager for the Four Wheel Drive Auto Co., Clintonville, Wis., has been appointed eastern sales zone manager.

• **J. W. Sheffer** has been appointed general improvement engineer of American Car & Foundry Co. and is in direct charge of the Improvement Div. with headquarters in New York. He has been with the company since 1908. **H. F. Schwarting** has been made general electrical engineer, with headquarters at St. Louis.

• **Harold L. Aldrich** has been appointed district representative in the New York office of General Electric Co.'s chemical dept. He joined General Electric following his recent discharge from the Navy. Before entering the service he was associated with the United Color & Pigment Co., division of the Interchemical Corp., Newark, N. J.

• **L. B. Flaws** has been appointed sales manager of Diebold, Inc.'s Systems Products Div., Canton, Ohio. Mr. Flaws, who will head this division, formerly was assistant to the vice-president of International Business Machines, with whom he was associated for over 25 yr.

• **A. N. Nelson**, works manager, Los Angeles Tube Div., Phelps Dodge Copper Products Corp., has been transferred temporarily to New York. He will then go to Fort Wayne, Ind., to be manager of the Inca Mfg. Div. and the new wire mill that is being built in Fort Wayne.

• **David B. Grant** has been appointed assistant sales manager of Empire Tool Co., Detroit, upon his return from USNR. Before leaving for naval service he was Michigan sales director of that company. **F. Gordon Sporr** has been appointed secretary-treasurer of the company.

• **E. J. van Dyk**, with General Motors since 1929, has been appointed petroleum industry field engineer and district manager of sales for the Detroit Diesel Engine Div. of G. M., with headquarters at Tulsa, Okla.



**C. C. McDERMOND**, representative in South America, Welding Fittings Div., Tube Turns, Inc.

• **C. C. McDermond** has been appointed representative of the Welding Fittings Div. of Tube Turns, Inc., in Venezuela and Colombia, S. A. Mr. McDermond and his assistant, **C. T. McCoy**, make their headquarters in Maracaibo, Venezuela.

• **Carl de Laval** has been appointed Pittsburgh sales representative of Chester Electric Steel Co., Chester, Pa.

• **S. B. Applebaum** and **H. L. Tiger**, vice-presidents and directors, and **Norman E. Brice**, mechanical engineer, of the Permutit Co., New York, have announced their resignations after 30 yr association with that firm. They are organizing a new company under the name of Liquid Conditioning Corp.

• **H. Grant Leonard**, eastern district manager of A. Leschen & Sons Rope Co., St. Louis, died recently.

• **John J. Prindiville**, 75, president of the Lapointe Machine Tool Co. of Hudson, Mass., and head of the International Engineering Works of Framingham, Mass., died in Boston on Apr. 30.

• **Walter Nuttall**, 63, general purchasing agent of Blaw-Knox Co., Pittsburgh, died May 3. Mr. Nuttall had been with Blaw-Knox Co. for 26 yr.

## OBITUARY...

• **E. J. Simons**, president of the General Machinery Co., Spokane, died Apr. 17.

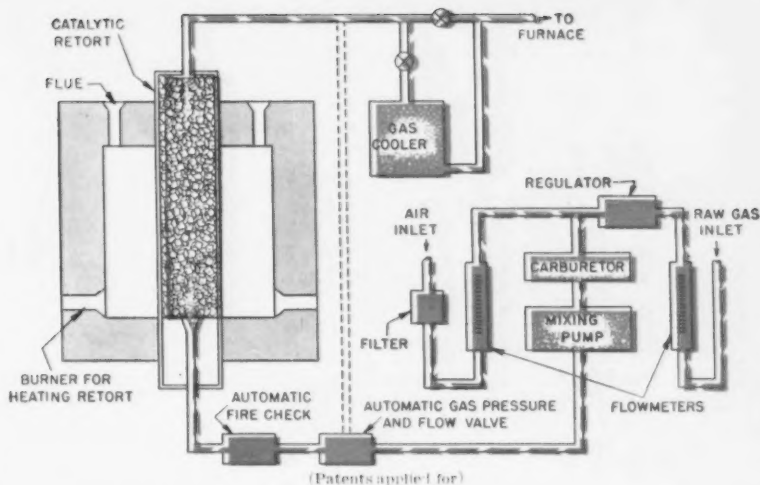
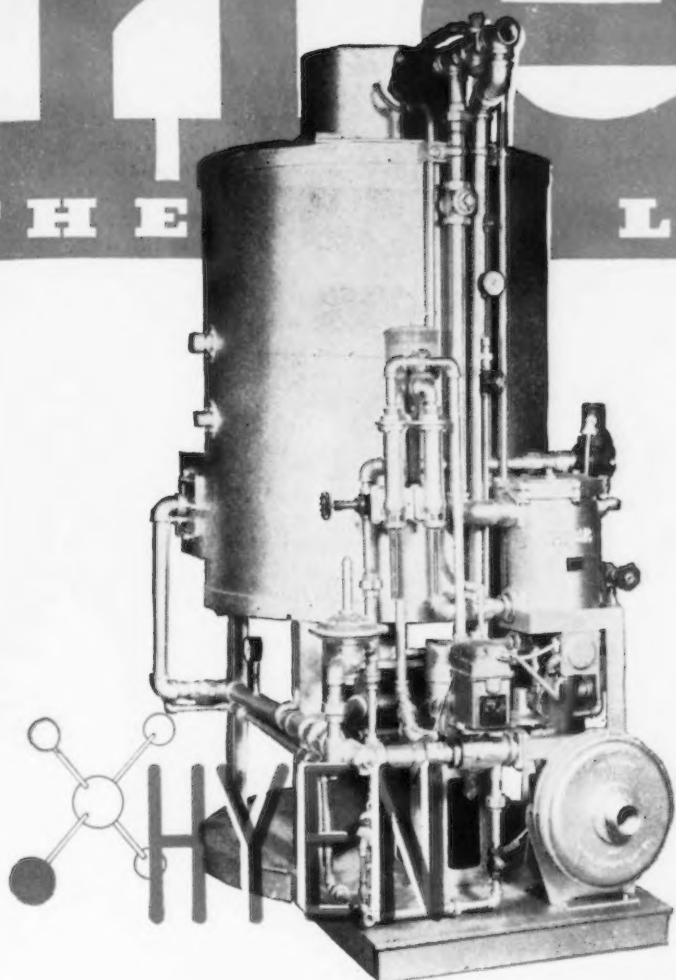
• **Ralph E. Carothers**, with the Tractor Div. of Allis-Chalmers, Milwaukee, for the past 15 yr, died Apr. 28 after a long illness.

• **Thomas W. Ryley**, treasurer of Eastern Machine Screw Corp., New Haven, Conn., died recently. He had been with the corporation since 1921.



# THE

# LINDBERG



SCHEMATIC FLOW DIAGRAM FOR HYEN HYDRIZING GENERATOR

## ATMOSPHERE GENERATOR

*Fully Automatic! Endothermic!*

**For HARDENING - BRAZING - SINTERING all medium and high carbon steels WITHOUT DECARBURIZATION!**

Heat treaters have long wanted an atmosphere generator for production heat treating and brazing which was fully automatic, required no charcoal, did not have to be burned out periodically to remove soot, and could be depended on to produce a precision gas of consistent analysis month in and month out. Now after three and a

half years of rigorous research—both in the laboratory and on 24-hour-a-day service on production lines, heat treaters agree that the Lindberg Hyen Generator meets all their requirements, and more, by enabling them to do a precise job easier, more simply, and with consistent results.

### FULLY AUTOMATIC

Light the pilot, and from then on every phase of the generator is automatically controlled through push-buttons. Temperature, mixing, pressure and flow control are fully automatic. Gas ratios do not have to be readjusted when furnaces are cut in or out of the line.

### NO SOOTING

Time is saved and production increased because high temperature cracking eliminates sooting. Thus, periodic cleaning and burn out periods are not required.

### REFRACTORY RETORT

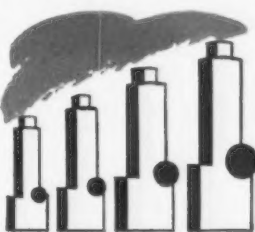
Higher cracking temperature than ever before possible because a new type refractory retort is used. Result is cleaner and drier atmosphere—No CO<sub>2</sub>—Minus 10°F dew-point—methane 1.0%.

### FOUR SIZES

The Hyen Generator is made in 4 Standard sizes to fit any application—500, 750, 1500, and 2500 CFH. It can be used with your existing atmosphere furnaces. Because it is entirely automatic it can be located remote from furnaces.

### GAS OPERATED

The Hyen Generator operates on city gas, natural, propane, or butane. It is an endothermic catalytic cracking type—uses only gas for both atmosphere and heating.



*The* **HYEN**

derives its name from ENdothermic, and is one of the Lindberg line of four controlled atmosphere generators. The others are HYEX (EXothermic cracking), HYAM (AMmonia dissociation), and HYCO (high carbon monoxide).

**LINDBERG ENGINEERING CO.**  
2452 W. Hubbard St., Chicago 12, Illinois

Write for the new 12 page Bulletin No. 190. "Lindberg Controlled Atmospheres"

# LINDBERG

# FURNACES

# Dear Editor:

## OPA AND LUGGAGE PRICES

Sir:

For several weeks we have been endeavoring to obtain from OPA some relief in regard to the 1941 frozen prices but to date we have not as yet received any satisfactory answer or any help whatever. In this connection we notice in the issue of Apr. 11 that all stamping prices have been upped 19 pct effective Apr. 8 and we would appreciate your advising us if you have information on the order covering this control.

We manufacture practically 100 pct luggage hardware, which is a luxury and it is our understanding that all restrictions on this type of stamping have been removed, but we would like to know particularly if we are covered by the order of Apr. 8. We would very much appreciate your prompt assistance as our letters to Washington are delayed several weeks before we can obtain a reply and then it is of such a nature that it is of no value.

W. T. McCANDLISH  
Allimac Stamping Co.,  
Petersburg, Va.

● Your question had the OPA legal brains groggy for a while, but they finally came through with this decision: If an end item is exempt from price control, then the parts manufactured for its assembly automatically become exempt from pricing. However, if the end items are only suspended from control, then pricing restrictions which ordinarily apply to the component parts would remain in force, since a suspended item is also technically under control. Hence, OPA says, the 19 pct increase would apply to metal stampings which are sold for luggage manufacture since luggage has not been exempted from price control. We are forwarding a copy of amendment 32 to RMPR 136 which covers the stamping pricing change.—Ed.

## DEPRECIATION RATES

Please forward two copies of the article entitled "WAC Sets Depreciation Rates for Three Types of Surplus Machinery" as printed on p. 111 of the Mar. 21 issue.

D. E. MERRIMAN  
Purchasing Agent  
Stanley Works,  
New Britain, Conn.

## FLAME-HARDENING PARTS

Sir:

Please send a copy of the article dated Feb. 7 entitled "Flame-Hardening Small Machined Parts."

A. F. KOEHNE  
Purchasing Agent  
Pittsburgh Gear & Machine Co.,  
Pittsburgh 22

## WARTIME WAREHOUSE PRICES

Sir:

The issue of Feb. 7, 1946, p. 179, contains the statement—"While dollars and cents figures for warehouse prices during this period (World War I) are not available, we know that from a prewar index of 100, warehouse prices went to a peak of 370 and finally were frozen at 235."

This statement is not quite correct as there is in existence a very complete and detailed record of the dollar and cents per 100 lb price fluctuations, also the day, month and year on which they occurred. This record covers price changes of the leading warehouse commodities — bars, plates, structurals, hot rolled sheets, and forms the basis of a very interesting comparison of price movements then and now.

The year 1913 closed with bars \$1.65, plates 1.75, structurals \$1.75, blue annealed sheets (now hot rolled annealed), 10 gage, base \$1.95, f.o.b. Chicago. No price changes during the year 1914. By midyear 1915, the effects of the war demand from Europe began to be reflected in the movement of prices steadily upward from the lows of 1913 to the extremes of the year 1917, when, on Nov. 14, the War Industries Board fixed the maximum range of bars at \$4.10, plates at \$4.45, structurals at \$4.20 and blue annealed sheets at \$5.45.

The record is intensely revealing in its story of what was happening to prices and values prior to this country's entry into the war. Plates and blue annealed sheets sold at \$10.00 per 100 lb during midyear of 1917, compared with \$1.75 and \$1.95 respectively during the year 1913, which is an example of what happens under the free movement of the economic law of supply and demand. Also there existed short periods of time prior to the freezing of prices where the prices of certain commodities were lower from warehouse than from mill. It reflected the splendid efforts of warehouse management to prevent prices from going out of control.

Any effort to reach a decision by comparing conditions then and now must take into consideration the difference in attitude of Washington authorities. Price control was lifted immediately after the Armistice of 1918, when steel commodities were again subject to the influences of supply and demand. The price trend was reversed, which resulted in a reduction of warehouse prices on bars of \$16.00 per ton, plates \$17.00 per ton, structurals \$16.00 per ton, sheets \$17.00 per ton, during the first quarter of

1919, remaining at this level until 1920, when prices advanced during February and held until another decline occurred in November of that year, continuing through 1921 and the first quarter of 1922. Starting in April, 1922, the trend was again upward, continuing until June 1924, when a small reduction occurred at which level a condition of balance in supply and demand seemed to exist as that price level remained unchanged during the years 1925, 1926, 1927, 1928, 1929, with only exceptions of two minor reductions in the price of sheets, the first occurring in November, 1925, the second June, 1928.

The immediate effect on warehouse prices of the cessation of hostilities of World War I was a reduction, while that of World War II has been an increase. These opposite movements undoubtedly reflect the results of the present day effort to control the cause and effect of the law of action and reaction, which means that price control during the recent period of hostilities might be termed the reactionary period for which there will probably be a counterbalanced period of action when all restrictions are removed. During the period of hostilities of World War I there existed the period of action as applied to values and their movements, at the conclusion of hostilities the period of reaction began in approximately 60 days. This order has been reversed in World War II because of the political effort to control the forces constantly moving to effect values and their movement.

The 33-yr record of price movements when viewed from the standpoint of exact dates and frequency of occurrence form a very interesting picture of past performance by which the future may be measured, if and when artificial restrictions to economic forces have been removed.

JAMES A. LEAHY  
Oak Park, Ill.

## COMPARABLE TOOL STEELS

Sir:

Will you please send me ten copies of the reprints of the revised edition of "Chart of Comparable Tool Steel Grades," for which we enclose our check for \$1.50.

M. E. REYNOLDS  
Horace T. Potts Co.,  
Philadelphia 34

● Reprints have been forwarded.—Ed.

## SPINDLE DRILLING

Sir:

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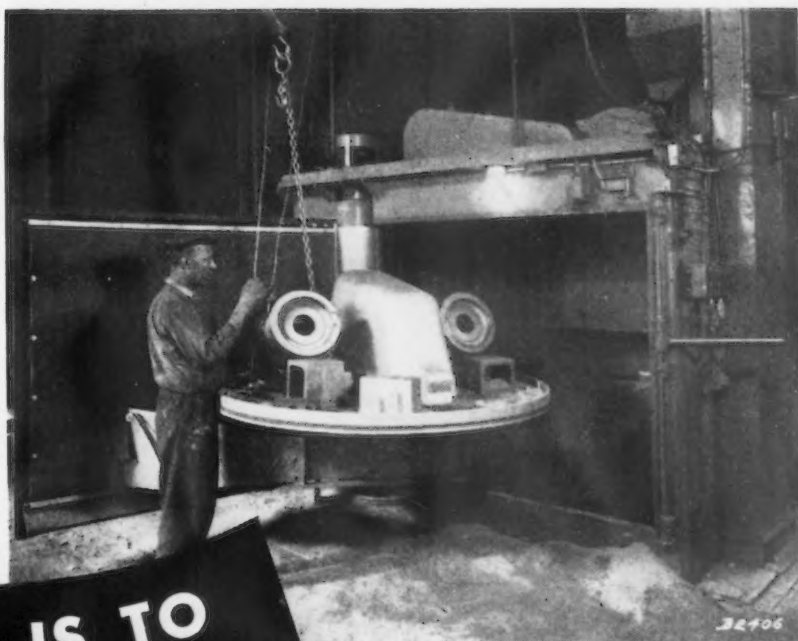
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# This Industrial Week . . .

## • Mine Truce of Little Help to Steel

## • More than 2.4 Million Tons Lost

## • Ingot Rate Drops Nine Points

**I**T may be the middle of next week before the coal mine truce will be of any benefit to the steel industry, if then. While the Solid Fuels Administration has indicated that steel companies will be given consideration in the allocation of coal from captive mines owned by steel firms, at least a week would be required before a normal flow of fuel would reach byproduct coke ovens.

This week the steel industry was rapidly reaching a state of paralysis and if the "truce" in the coal strike does not result in a settlement, the industry will find itself almost completely shutdown. Steel ingot output has dropped nine points this week to 49 pct of capacity. Early this week there were still many hurdles before conclusion of a contract and the feeling among mine operators was anything but optimistic. Most of the latter have not considered the 2-week truce as a termination of the strike, but rather as a "stay of execution."

The uncertainty which prevails over the possible outcome of current coal negotiations has forced many steel firms to continue shutdowns and to further curtail output this week. One startling fact emerging from the recent series of strikes is that the putting on and taking off of equipment concurrent with complex adjustments involved, causes almost as much loss in steel output as do actual shutdowns.

By the end of this week the coal strike alone will have cost the steel industry more than 2,400,000 tons of ingots and it is estimated that by the end of next week regardless of the outcome in negotiations, the total loss since Apr. 1 will approximate 3,000,000 tons of steel ingots. This loss combined with that suffered from the steel strike will reflect an elimination from the steel market this year of well over 10,000,000 tons of steel with the final figure before normal operations are resumed expected to exceed 12,000,000 tons since Jan. 1.

**D**ESPITE the fact that steel firms last week were emphatically telling customers that future delivery promises on steel products were impossible to give, consumers were still flocking to district offices with fresh orders. It is expected that following the coal settlement every steel company in the country will be forced to review its finishing mill schedules, and delivery commitments will probably be put back as much as a month or two months because of the coal tie-up.

It is estimated that the steel industry as a whole now has a backlog which would require about a half a year's output of steel. While some of this unfilled tonnage may represent duplications, firm orders which

eventually will be shipped constitute about 4½ to 5 months' output at a high level of activity. Also many orders have not been placed because mills have turned them down. The significance of this market condition, plus the effects of shutdowns, indicates clearly that the supply of steel products will be exceptionally tight for some time.

The steel industry staged a remarkable comeback after the steel strike, but this feat cannot be duplicated after the coal strike. In February when the steel strike ended, steel mills had supplies of raw materials such as coal and scrap with which to step up operations quickly. In the past several weeks coal supplies have dwindled and scrap has been utilized to make up for deficiencies in pig iron inventories. Thus mills must build up raw material stockpiles before normal steel production is attained.

The alloy steel price increase to supplement the 4 pct rise granted Mar. 1 is expected to be announced late this week or early next week. While the steel industry had asked for an additional increase of 3 pct, it is expected that the OPA announcement will reflect a smaller revision than that figure. Having originally intended to defer its negotiations for a price adjustment pending settlement of the coal controversy, it is understood the coke industry is now seeking immediate action by OPA.

**F**REIGHT carbuilders have considerable work ahead of them and orders currently on the books include 50,000 freight cars for domestic service and 36,750 cars for foreign service. Passenger cars on order number close to 2000. Builders are now running into material shortages which may cause some shutdowns or curtailments in the near future. Pacific Fruit Express has ordered 2000 refrigerator cars, with 500 each to be purchased from Pullman-Standard, General American Transportation Corp., American Car & Foundry and Pacific Car & Foundry.

Steel mills are growing concerned over the rapid rate of scrap consumption and there are prospects that a new scrap crisis of unparalleled severity may follow the end of the coal strike. This outlook has caused many steel firms to be approached by customers offering to trade scrap for a place on mill schedules.

Such bartering attempts have come from some large industrial scrap producers who have offered to earmark large tonnages of scrap for comparatively small amounts of new steel with prompt delivery. Most mills are shying clear of such a dicker fearing that it would upset their entire quota system.



• **CEMENTED CARBIDES**—The cemented carbide industry is awaiting full scale production of industry for an upswing in business. Sales currently are rather slow, mainly because metal fabricators have not gotten into production. Deliveries on standard items are running pretty much from stock. The industry is somewhat surprised at the new applications that are developing for carbides. One company has been testing carbide rolls for such mills as the Sendzimir mill currently under construction for the new Washington Steel Co. Spindle bearings made of carbide have shown excellent results. New techniques in the extrusion of carbide rounds up to  $\frac{3}{8}$  in. in diam and the extrusion of carbide tubing are under development.

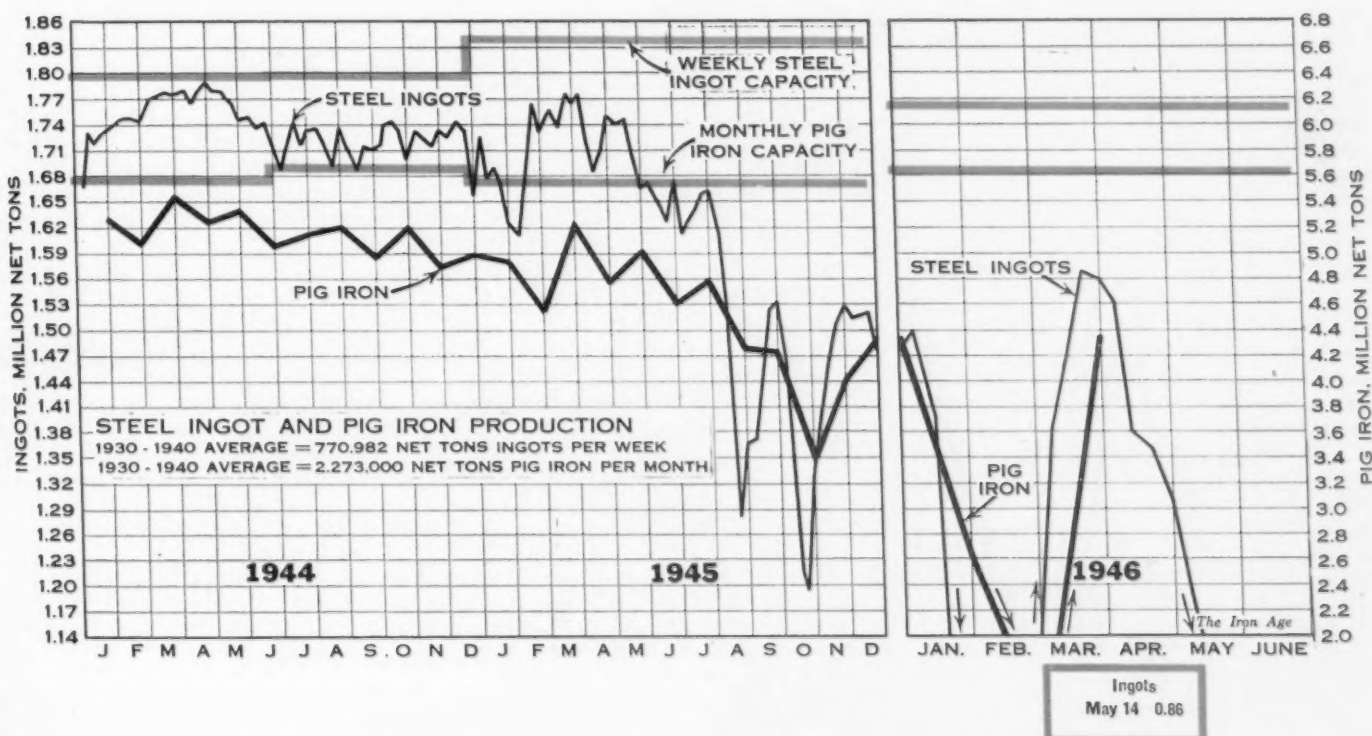
• **MORE BARS FOR SOUTHWEST**—Following a grant of price relief from the OPA, Sheffield Steel Corp. plans to reopen its Sand Springs, Okla., reinforcing steel mill, shut down during the war, about June 1. Pricing will be on the basis of 3.05¢ lb f.o.b. mill for cut lengths, with production at the rate of approximately 3500 tons per month. Meanwhile, rerolling mills are reopening in all parts of the country, and, with billets in only light production, are snagging a greater proportion of the business than normally.

• **GOVERNMENT NAIL STOCKS?**—Nail circles are buzzing with apparently reliable but unconfirmed reports that the government, presumably the Army, is holding over 60,000 tons of nails which it refuses to declare surplus unless producers will agree to replace them. Such a promise is remote under present production conditions. Meanwhile, because of the small units involved, black market tales are gaining circulation in greater number than those concerning practically any other steel product. West Coast sales at \$15 per keg have been reported, with transport by truck from Chicago to the Coast also rumored.

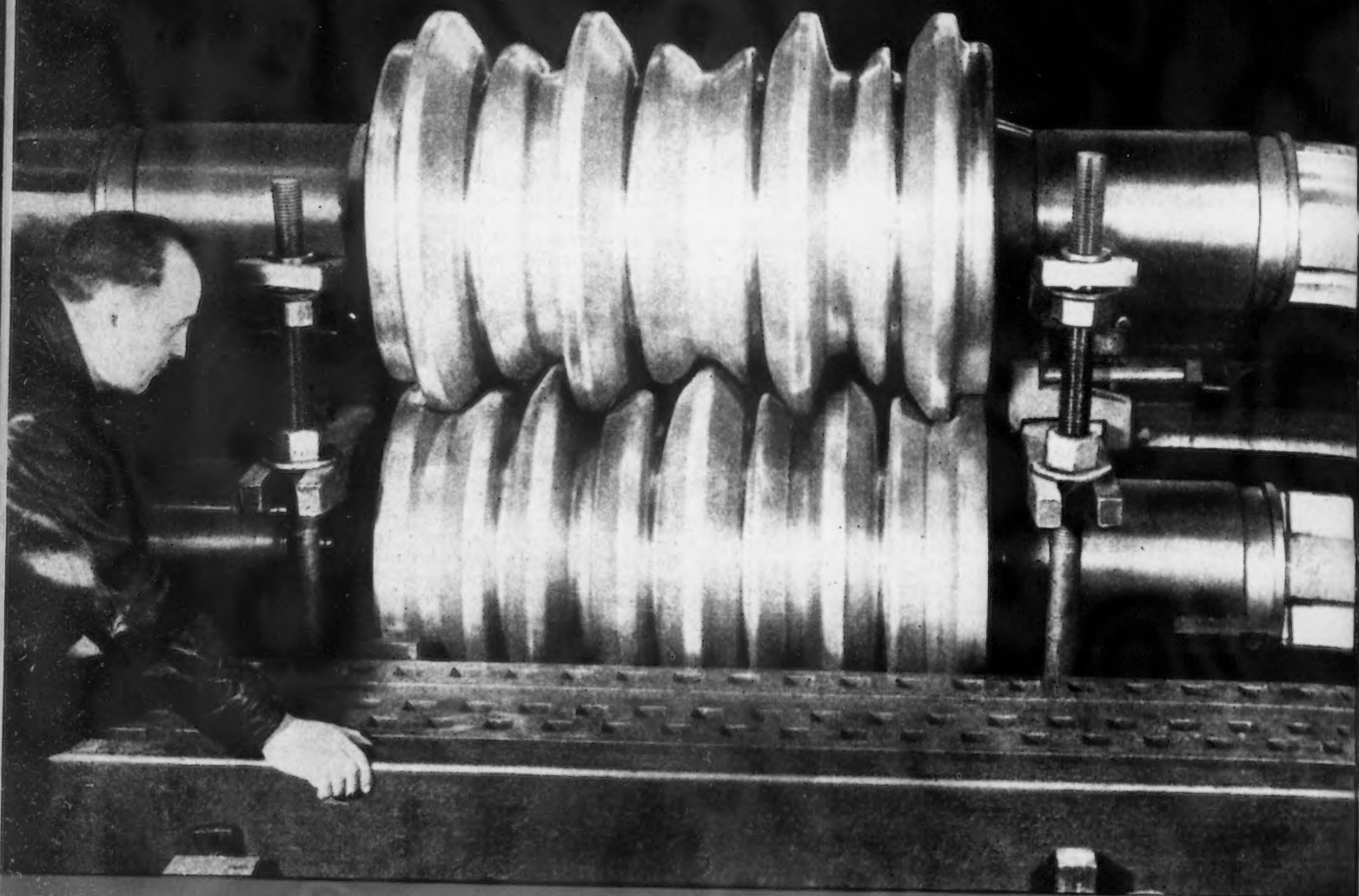
• **BALE TIE SHORTAGE**—Independent bale tie producers who have been squeezed since higher wages and a \$6 a ton increase in wire were inadequately offset by only a \$6.50 increase in tie prices, still have been unable to get relief and several withdrawals from the market may be in prospect. The integrated producers are turning out only a restricted quantity. From the farmer's standpoint the bale tie situation is more serious than the shortage of barbed wire, nails and galvanized sheets because it could be reflected suddenly and directly in crop loss or dislocating of stock feeding activities.

• **STAINLESS**—Flat-rolled stainless products are in heavy demand, especially polished sheet and strip. Bar demand, in the larger sizes, is comparatively weak, with capacity outstripping demand. In the smaller sizes, however, demand is running well ahead of production. Stainless has not been too hard hit by the coal strike, being affected mainly from a steel and scrap supply rather than a coal supply. Consequently, it is expected that recovery to maximum operations following the coal strike settlement will be rapid. There are apparently some war stocks of wartime compositions, mainly in the form of bars, still hanging over the industry, but as far as can be determined there has been no dumping of them as yet.

• **PIG IRON**—Merchant pig iron is fast becoming a jewelry item, as the result of the combined effects of the coal strike and the closing down of blast furnaces by merchant producers because of price. It is estimated that upwards of 15 furnaces, some DPC, are out of production because of price alone, with many more, of course, not in operation because of the coal strike. These latter will resume operations when the coal strike is over, but the former furnaces may not go into operation until some price adjustment is made on iron.



# MESTA *Rolls*

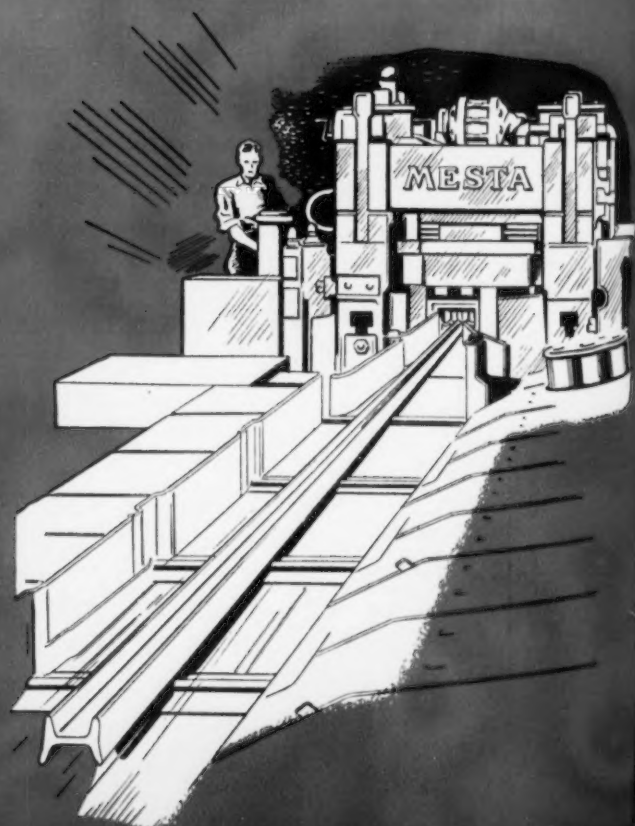


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## Coal Truce Holds Little or No Relief for Steel Producers

### Washington

• • • Captive mines are included under emergency restrictive regulations placed by SFA upon coal distribution during the truce period. These mines are placed on the same level as commercial pits, thus giving steel companies no preference.

The SFA order sets up three preferential classes of consumers, but does not assure an unlimited supply.

First preference includes public utilities, railroads, laundries, hospitals, food processing and refrigeration plants. They are authorized to order for May, plus amounts necessary to bring stockpiles up to a 20-day supply. Steamboats and tugs on the great lakes, tidewaters and rivers may receive enough for May operation.

In the second preference class are industrial consumers who are permitted to order sufficient coal to meet requirements for the remainder of May.

The third group includes domestic consumers which will receive preference to the "limited extent necessary to alleviate actual hardship or distress." Whatever coal is left after these three classes are served will go into the industrial stockpile to be "distributed equitably, and so as to avoid undue distress to our economy."

Retailers and dock operators may order and distribute coal under the same limitations.

### Pittsburgh

• • • The two-week coal strike holiday won't mean a thing to steel producers in this area, mainly because many mines are not going back to work and those that are will probably be producing coal for the government rather than the steel industry. The U. S. Steel Corp. only had one mine working on Monday in the Pennsylvania district, producing only a dribble of coal. On Monday, considering all the corporation's coal mining activities, nationwide, production was at the rate of 17,000 tons a day, compared with a normal 89,000

tons a day. This rate was expected to pick up during the week, depending upon more mines going back to work and more complete crews at the mines already operating. Kentucky operations were only at 50 pct production on Monday, with 60 pct of the crews working at the operating mines. West Virginia had about 40 pct production with 60 pct of the working crews. Illinois operations had 55 pct production.

Jones & Laughlin Steel Corp.'s mines are believed to be in fair production, but there was a secret-like situation in their mining areas. The district president of UMW stated that 37 of the locals had not gone back to work, and for fear that these miners would picket those mines in operation, he wouldn't reveal which mines were in production.

Crucible's mines were not in production on Monday, and while the company had anticipated higher operations because of the strike-holiday, operations had to be cut very sharply early in the week.

### Straw in the Wind?

#### Washington

• • • First indication of a break in the dead-lock between the UMW and coal operators came May 13 when the operators agreed to pay the miners some \$3 million in disputed overtime pay.

The amount involved is about \$4 to \$16 per worker. The alleged overtime resulted from counting idle holidays as days worked in computing pay for the sixth and seventh consecutive days worked. The executive order setting up this method of calculation expired last August and four holidays have occurred since that time.



MAYBE YES, MAYBE NO: These empty coal barges lined up at the Clairton Works of Carnegie-Illinois Steel Corp. will be used for coal this week, but it may not go to the steel company plant. The government has control over all coal mined at steel company "captive" pits, and may divert it for other purposes.

### Chicago

• • • Most steel producers in the Chicago district, like those in the rest of the country, withheld action on putting additional furnaces into blast on the basis of the truce, and were waiting to see whether any coal rolled in before modifying plans to withdraw additional furnaces. Carnegie-Illinois put one more blast furnace into operation at Gary.

Lifting of regulations limiting industrial power consumption to 24-hr a week changed completely the complexion of nonferrous smelting and manufacturing operations which, with few exceptions, had been shut down completely since the early part of last week, and allowed steel making operations dependent on purchased power to resume. All nonferrous smelters were again producing by the middle of this week.

As a sample of what may be the pattern of resumption of steel making operations generally when a final coal settlement is reached, Republic Steel Corp., which had ceased operations at South Chicago during the power suspension, began putting its furnaces under heat immediately but did not expect production until the latter part of this week. Wisconsin Steel Works of International Harvester Co., also a power suspension casualty, resumed operations at a reduced rate, but Youngstown Sheet & Tube which had given employees of its bar and merchant tube mills a vacation, was unable to call them back to work this week.

### Cleveland

• • • Shutdown of Republic Steel Corp.'s iron and steel making and finishing facilities has been halted and operations will continue at the

(CONTINUED ON PAGE 107)

## Pittsburgh Seen Losing Position of World's Steel Center

### Pittsburgh

•••Pittsburgh is yielding its crown as the world's leading steel producer to Chicago. The rated capacities of the two steel producing centers are a matter of about 1 million tons apart with Pittsburgh still in the lead, but from a production standpoint Chicago has been surpassing Pittsburgh regularly since VJ-Day. The powers that rule what grew out of the organization that Andrew Carnegie built are forced by economics to shift the center of their activities westward, a trend that will in a few years move the steel capital of the world to Chicago.

While this seems a heresy, there are good, sound economics behind the shift. Pittsburgh, as a city, is not too attractive for industry. The fact that no new industries have come into the city in the past 30 yr is proof of the limited possibilities offered by the city. Taxes are reported to be too high for industry and this is true of the surrounding communities where the bulk of the steel industry is presently located. Steel producers

By T. E. LLOYD

• • •

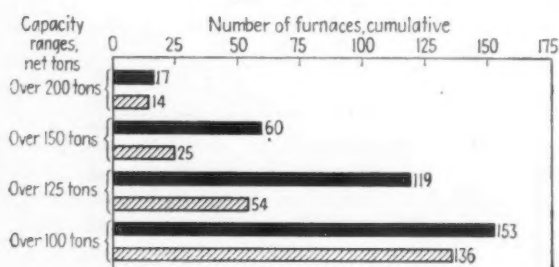
have paid the bulk of the taxes in these adjacent towns and boroughs for many years, and in the past 12 or 14 yr have had little to say about local government.

Pittsburgh, as a city, has been delinquent in its thinking regarding its rail facilities and the rail rate structure into and out of the city. Holding the No. 1 position in steel, no effort was made to see that industry was protected from exorbitant freight rates. In 1944, Benjamin F. Fairless, president of U. S. Steel Corp., said that "Forty years ago Pittsburgh was at an average freight disadvantage of only \$1.00 a net ton on shipments of steel from Pittsburgh to New York, as compared with similar shipments by Eastern competitive mills located nearer to New York. Today that freight disadvantage averages \$3.80 per net ton. Nothing has occurred in the interval

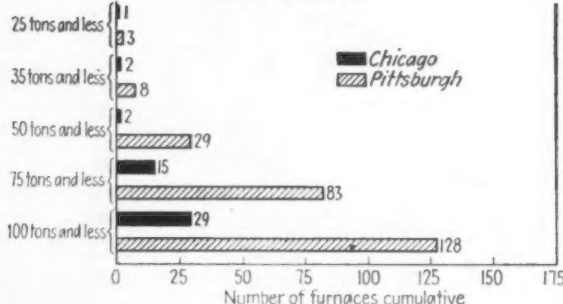
to justify such a 280 pct increase in the differential. The effect has been to push Pittsburgh back into the hinterland."

More recently, OPA and its price control system afforded the final straw which broke Pittsburgh in its bitter fight for survival in national markets, restricting the city's steel industry to a rather short radius of marketing activities. Many producers have withdrawn from Eastern, Midwestern, and Far Western markets. Low profit margins and heavy freight absorptions keep Pittsburgh mills at home. This withdrawal from such markets will undoubtedly be reversed as soon as operating rates tumble, but it was a tipoff to Midwestern producers to complete their line of products and make the steel industry in the Midwest forever independent of Pittsburgh. Thus, OPA has achieved what the Federal Trade Commission has been trying to accomplish since 1924—an expansion of the basing point system to the point that every area of production becomes a basing point on any particular

### Large Furnaces



### Small Furnaces



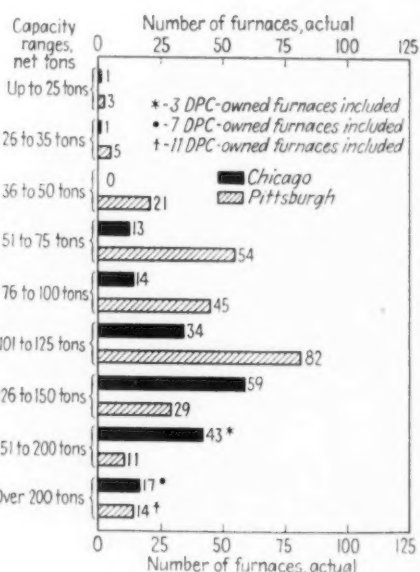
### LEFT

• Capacities of openhearth furnaces in the Pittsburgh and Chicago districts in net tons shown cumulatively.

• • •

### RIGHT

• Openhearth furnaces in Pittsburgh and Chicago shown in various capacity ranges.



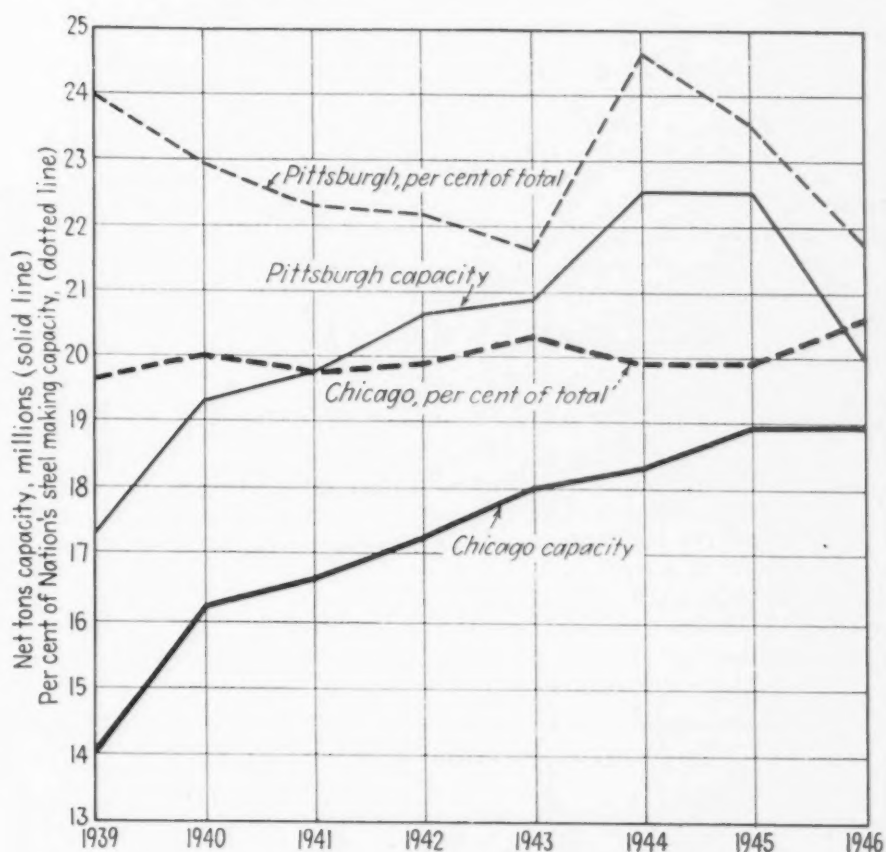


product, and, consequently, sales will be governed by freight absorption.

In being the leader and the pioneer in the steel industry, Pittsburgh suffers some technological disadvantages. Much of the equipment now in use is very antiquated and the bulk of the steelmaking capacity is old, low in capacity and obsolete. As shown in fig. 1, of the 264 openhearth in the district, only 136 have capacities rated at more than 100 tons and only 54 are over 125 tons in capacity. On the other hand, Chicago with 182 openhearth has 153 rated at more than 100 tons capacity and 119 at capacities greater than 150 tons. Obviously, operating costs in the production of steel are higher in Pittsburgh than in Chicago. Fig. 2 shows the actual number of furnaces in various capacity ranges and indicates that the bulk of Chicago's furnaces are in the higher ranges, from 126 to more than 200 tons capacity per heat per furnace.

The steel industry has never been as keen to replace equipment as it has been to install new equipment, so Chicago reaped the benefits of technological developments of the past 25 yr, by acquiring newer steelmaking equipment of greater capacities. Meanwhile, Pittsburgh has had to make do with what it had while new capacities were added elsewhere. Chicago's capacity is made up primarily of plants of U. S. Steel Corp., Republic, Youngstown Sheet & Tube and Inland, the first three of which have older facilities of lower capacities in the East. Inland, a purely Midwestern producer, has its share of smaller openhearth furnaces, 12 of which are less than 100 tons capacity, but it also has 24 ranging up to 175 tons capacity. Thus, as Eastern mills went West they installed larger and more modern equipment than they had in their original plants.

Pittsburgh's decline as the steel center started in 1924 with the abolishment of the Pittsburgh Plus system, but took on considerable momentum in 1938. At that time steel companies made new basing points in the East, others in Buffalo, Cleveland, Youngstown and various other points. This meant that on many products, such as bars, concrete bars, flat-rolled items, wire, etc., Pittsburgh mills had to start absorbing



CATCHING UP: The solid lines show annual steel capacity in the Pittsburgh and Chicago districts. The dotted lines show what percentage each district represents to the country's total steel capacity. Note changes in past several years.

freight in order to compete with the mills in the areas where the new basing points had been established. As time went on, more basing points were added and more freight had to be absorbed by Pittsburgh mills.

Some years ago, certain Pittsburgh producers carefully surveyed the markets and reached the conclusion that their only course was to withdraw from certain areas. That decision was the forerunner of what recently has caused Chicago and Milwaukee considerable concern—steel companies withdrawing from those markets. This trend will ease somewhat after business falls off and operations drop.

The same trend with regard to expanded basing points has been occurring in the stainless industry. For many years Pittsburgh was the only basing point, but some months ago a multiple basing point system began to develop, forcing Pittsburgh producers again to take losses in freight absorption. As time goes on, the

items that are still favorable to Pittsburgh will become less and less.

To more carefully determine and meet arising conditions, U. S. Steel Corp. some years ago, moved its headquarters from New York to Pittsburgh. It is apparent now that one of the primary aims in the move has never been achieved. It seems that the intention was to place functional officers in Pittsburgh to act as what might be termed "line" officers, heading up the individual departmental efforts of all subsidiary companies and directing their efforts. However, the hierarchy of the individual subsidiary setups, such as Carnegie-Illinois, American Steel & Wire, and the others, has successfully kept U. S. Steel's officers out of the actual functioning of the individual activities of the various subsidiaries.

This was clearly brought out recently by one of U. S. Steel's vice-presidents when asked what his job actually involved. He said his job is that of a counselor,

an advisor, a father confessor, and a big brother to the vice-presidents of the same category in the various subsidiary companies. He claimed no functional powers in any of the subsidiary companies except through the established channels of the separate companies. This was not the intention when the headquarters of U. S. Steel were moved to Pittsburgh, but a tightening of control and actual operations of these subsidiaries through this higher echelon setup is expected as present-day subsidiary heads move out and new ones supplant them.

Thus, when J. L. Perry, president of Carnegie-Illinois indicated a withdrawal from Pittsburgh, it can be accepted as policy of U. S. Steel. He said a few weeks ago

in Pittsburgh: "We must logically expect that when it is necessary for some of the present steel manufacturing facilities in Pittsburgh to be replaced, they will be installed at locations closer to the concentrated consumption of steel, and there will be some reduction in the total ingot capacity in the Pittsburgh area." The same will probably hold true for National Tube's holdings in Pittsburgh and Carnegie's activities in the Mahoning Valley area. Already fears have been expressed by CIO officials at National Tube's Elwood City plant that the company is planning to move the activities to Gary plant which is now in the process of being obtained from DPC. Much of the Tube Co.'s pipe activities have been moved from

McKeesport to Lorain, Ohio. Also, the acquirement of the DPC open-hearth plant at Homestead by Carnegie-Illinois will mean the retirement of considerable older capacity, thus reducing the Pittsburgh capacity.

The Eastern tidewater plant seems now to be more than a dream, with indications that plans are about completed for an integrated mill that will take care of Eastern markets that cannot be reached from Pittsburgh except by excessive freight absorption and also will take care of and retain U. S. Steel's share of the West Coast markets. This would indicate too that there is not much concern on the part of U. S. Steel concerning the disposition of the Geneva DPC plant.

As to the Pacific Coast, U. S. Steel is expanding its Columbia Steel Co. to meet accelerated demands for flat-rolled products. Regardless of whether or not the Geneva plant is acquired by U. S. Steel (and some top U. S. Steel officials profess not to want it), Columbia will have all the steel it needs, especially after the East Coast plant is built. Bethlehem and Columbia together, observers feel, will be able to give the Kaiser Fontana operation cards in spades and still may make it struggle on West Coast business. Unless startling operating results are forthcoming from the Kaiser plant, competition will be pretty rough.

In losing its crown as the "Queen City of Steel" Pittsburgh will by no means become a non-entity in the industry. As a matter of fact, it may be several years before Chicago wrests the crown from Pittsburgh. As shown in fig. 3, capacities of the cities are close, but a million tons a year, the present difference, may take a while to overcome. The main point, however, is that Chicago has been consistently surpassing Pittsburgh on a "tons produced" basis, since week after week its operating rate has been substantially higher than that of Pittsburgh.

There are certain factors working against this inevitable change, but their effect will only be to slow rather than stop the trend. Jones & Laughlin Steel Corp., Allegheny-Ludlum, and other companies will help delay the shift. Currently, J&L is planning an expenditure

#### AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR: 1946										
Based on Reports by Companies which in 1944 made 97.9% of the Open Hearth, 100% of the Bessemer and 86.7% of the Electric Ingot and Steel for Castings Production										
Period	Estimated Production—All Companies								Calculated weekly production, all companies (Net tons)	Number of weeks in month
	OPEN HEARTH		BESSEMER		ELECTRIC -		TOTAL			
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	3,528,090	51.1	207,512	47.4	136,452	29.2	3,872,054	49.6	874,053	4.43
February	1,300,944	20.9	25,905	6.6	65,668	15.6	1,392,517	19.8	348,129	4.00
* March	5,946,698	86.2	363,949	83.1	196,400	42.0	6,507,047	83.3	1,468,859	4.43
* 1st Quarter	10,775,732	53.8	597,366	47.0	398,520	29.4	11,771,618	51.9	915,367	12.86
† April	5,347,964	80.0	285,779	67.4	243,255	53.8	5,876,998	77.7	1,369,930	4.29
May										4.43
June										4.29
2nd Quarter										13.01
1st 6 months										25.87
July										4.42
August										4.43
September										4.28
3rd Quarter										13.13
9 months										39.00
October										4.43
November										4.29
December										4.42
4th Quarter										13.14
2nd 6 months										26.27
Total										52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,558,041 net tons open hearth, 98,849 net tons Bessemer and 108,491 net tons electric ingots and steel for castings, total 1,765,381 net tons; based on annual capacities as of January 1, 1945 as follows: Open hearth 81,236,250 net tons, Bessemer 5,154,000 net tons, Electric 5,569,290 net tons, total 91,959,540 net tons.

Note—The percentages of capacity operated are calculated on weekly capacities of 1,355,041 net tons open hearth, 98,849 net tons Bessemer and 105,491 net tons electric ingots and steel for castings, total 1,762,381 net tons; based on annual capacities as of January 1, 1946 as follows: Open hearth 81,236,250 net tons, Bessemer 1,184,000 net tons, Electric 5,500,290 net tons, total 91,890,540 net tons.

\* Revised.

† Preliminary figures, subject to revision.

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Based on Reports by Companies which in 1944 made 97.9% of the Open Hearth, 100% of the Bessemer and 86.7% of the Electric Ingot and Steel for Castings Production										
Period	Estimated Production—All Companies						Calculated weekly production, all companies (Net tons)	Number of weeks in month		
	OPEN HEARTH		BESSEMER		ELECTRIC				TOTAL	
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity			Net tons	Percent of capacity
January	6,468,815	90.5	379,062	76.0	358,346	77.3	7,206,223	88.8	1,626,687	4.43
February	5,967,842	92.4	347,227	77.1	339,520	81.1	6,654,589	90.8	1,663,647	4.00
March	6,927,377	96.9	398,351	79.8	382,237	82.4	7,707,965	95.0	1,739,947	4.43
1st Quarter	19,364,034	93.3	1,124,640	77.6	1,080,103	80.2	21,568,777	91.6	1,677,199	12.86
April	6,541,097	94.4	372,952	77.2	377,877	84.1	7,291,926	92.8	1,699,750	4.29
May	6,663,577	93.2	402,100	80.6	386,075	83.3	7,451,752	91.8	1,682,111	4.43
June	6,129,266	88.5	379,807	78.6	333,217	74.2	6,842,290	87.1	1,594,939	4.29
2nd Quarter	19,333,940	92.1	1,154,859	78.8	1,097,169	80.6	21,525,968	90.6	1,659,183	13.01
1st 6 Months	38,697,974	92.7	2,279,499	78.2	2,177,272	80.4	43,154,745	91.1	1,668,139	25.87
July	6,318,463	88.6	381,832	76.7	286,713	61.9	6,987,008	86.3	1,580,771	4.42
August	5,171,925	72.3	347,088	69.5	217,363	46.9	5,736,376	70.7	1,294,893	4.43
September	5,435,358	78.7	352,847	73.2	195,156	43.5	5,983,361	76.3	1,397,982	4.28
3rd Quarter	16,925,746	79.9	1,081,767	73.1	699,232	50.9	18,706,745	77.8	1,424,733	13.13
9 months	55,623,720	88.3	3,361,266	76.5	2,876,504	70.4	61,861,490	86.6	1,586,192	39.00
October	5,146,370	72.0	242,122	48.5	209,290	45.1	5,597,782	69.0	1,263,608	4.43
November	5,640,850	81.5	358,664	74.2	201,866	44.9	6,201,380	78.9	1,445,543	4.29
December	5,522,829	77.4	343,266	68.9	192,704	41.7	6,058,799	74.8	1,370,769	4.42
4th Quarter	16,310,049	76.9	944,052	63.8	603,860	43.9	17,857,961	74.2	1,359,053	13.14
2nd 6 months	33,235,795	78.4	2,025,819	68.5	1,303,092	47.4	36,564,706	76.0	1,391,881	26.27
Total	71,933,769	85.5	4,305,318	73.3	3,480,364	63.7	79,719,451	83.5	1,528,950	52.14
Note—The percentages of capacity operated are calculated on weekly capacities of 1,814,338 net tons open hearth, 11,258 net tons Bessemer and 104,940 net tons electric ingots and steel for castings (total 1,920,536 net tons). No change in capacity as of January 1, 1945 as follows: Open hearth 84,171,800 net tons, Bessemer 5,874,000 net tons, Electric 5,455,800 net tons, total 95,501,480 net tons.										

Note—The percentages of capacity operated are calculated on weekly capacities of 1,814,330 net tons open hearth, 112,658 net tons Bessemer and 104,640 net tons electric ingots and steel for castings, total 1,831,636 net tons; based on annual capacities as of January 1, 1945 as follows: Open hearth 64,171,300 net tons, Bessemer 1,074,000 net tons, Electric 4,455,890 net tons, total 95,801,190 net tons.



estimated at more than \$100,000,000 over the next three or four years to expand and modernize its facilities. The bulk of this expenditure will be in Pittsburgh. Open-hearth capacity at the J&L Pittsburgh works will be expanded by the installation of eight large units to replace the present No. 1 shop.

Allegheny-Ludlum is planning a capital expenditure, not yet announced as to where or the amount, to expand its facilities. Some of this expansion will be in Pittsburgh, but may not increase steelmaking capacity. The plan most likely will involve an expansion of finishing facilities such as a new silicon strip mill at its West Leechburg plant.

Crucible Steel Co. of America's capacity in the area may become a lesser factor, but should this occur the facilities involved will likely be transferred to another company rather than be abandoned or abolished. This will in no way decrease steelmaking capacity here and may actually lay the groundwork for a slight increase.

The trend of steel production today is to get closer to the consumer product. Some 15 yr ago, the industry aided and abetted further processors of steel because they served as a tonnage outlet. Special pricing deals, long-term cut price contracts, and other factors favorable to processors enticed them into the markets. Today, the trend is in the opposite direction. Producers want to do more of the work that these processors have been doing, making the end product and collecting the final price where the profit margin is wider. Typifying this trend is the withdrawal of J&L and Carnegie-Illinois from the sheet bar market, serving now only those customers that hold CPA allocations. Likewise, J&L is withdrawing rapidly from all semifinished markets such as hot rounds for cold drawing and rods for further drawing into wire products. Large anticipated expenditures by J&L for facilities for sheet galvanizing and specialty wire products are indications of this trend. Likewise, Carnegie's efforts to throw as much steel into flat-rolled products during the present coal strike is evidence of its intentions to keep close tabs on the highly finished products with their wider

profit margin. Carnegie's new silicon sheet mill to be installed at Vandergrift, Pa., is another indication of its intention to go after the better profit markets.

J&L's interest in Pittsburgh is fundamental and basic, since its main operations are here. However, its Cleveland plants, Otis and Lakeside, and its property holdings in the Chicago area are always potentials for expansion in areas of heavy consumption. While J&L is a very big factor in the Pittsburgh steel industry, if the battle on freight rates continues in the direction it is now going, even J&L may find itself in a posi-

tion where it is impossible to concentrate its production here.

So, the dynasty of steel, established by Carnegie, Frick, Jones, Laughlin, and many others whose names are integral with Pittsburgh's industrial history, is losing its position to a more youthful entry in the race for steel supremacy. Chicago will be the No. 1 steel center of the world with Pittsburgh the runner up. But, in being the first to hold top position, Pittsburgh will be acclaimed the "Queen City of Steel" long after it has actually lost that position. This is a hollow tribute frequently accorded the once great.

### Canadian Steel Production and Shipments

Toronto

• • • For the first two months of this year Canadian steelmakers produced 459,634 net tons of carbon steel ingots and castings and 18,882 net tons of alloy ingots and castings and for the same two months they shipped 455,175 net tons of carbon steel products and 12,925 net tons of alloy steel products. For the month of January shipments of primary steel materials totaled 243,245 net tons and in February 224,855 net tons. The following table shows a breakdown of production and shipments for the first two months of this year in net tons:

	Carbon Steel		Alloy Steel	
	Made	Shipped	Made	Shipped
Forging billets, etc.	9,843	8,521	281	666
Other semifinished shapes not for re-rolling	54,613	52,890	147	144
Structural shapes	24,328	25,034		
Plates	34,476	32,066	6	
Rails	61,936	58,469		
Tie plates, track material	13,435	14,904		
Tool steel	322	306	307	314
Hot-rolled bars for forging	9,779	9,194	4,530	4,780
Reinforcing bars	6,845	6,745		
Hot-rolled bars for cold-finishing	1,979	2,129		
Other hot-rolled bars	59,488	57,993	4,493	4,287
Pipes and tubes	31,648	31,164		
Wire rods	44,358	44,214	65	42
Hot-rolled black sheets	23,134	22,676		
Cold-reduced black sheets	4,454	4,454		
Galvanized sheets	14,257	13,486		
Steel castings—by ingot makers	8,759	8,892	2,637	2,408
Steel castings—by other foundries	4,175	3,387	79	64
All other shapes, including tinplate, tin mill black plate, cold-finished bars and strips	61,036	58,647	219	216

Shipments of primary iron and steel, including steel castings shipped by all foundries for the first two months of this year were made to consuming interests as follows in net tons:

	Carbon Steel	Alloy Steel
Automotive	9,057	6,628
Agricultural	17,660	245
Construction	23,734	50
Containers	26,979	16
Machinery and tools	13,789	1,229
Merchant trade products	44,934	85
Mining, lumbering, etc.	12,530	945
National Defense	365	2
Pressing, forming and stamping	14,208	137
Utilities	5,604	88
Railway operating	68,473	580
Railway cars and locomotives	30,175	846
Shipbuilding	8,545	53
Unclassified	5,516	117
Warehouses	49,178	520
Producers' interchange	70,539	461
Export to British Empire	35,038	170
Export to other countries	18,651	753
Total shipments	455,175	12,925

## Revision of Orders To Raise Prices of Mine Machinery Equipment

Toronto

• • • Revision of orders of the Wartime Prices & Trade Board in Canada and the OPA in the United States, have resulted in increased prices for mine machinery and supplies as well as various other machinery and equipment. The list of items gradually is broadening as the boards of the two countries decided favorably on applications of manufacturers for price increases. In Canada each individual item and each manufacturer must be dealt with separately with regard to price advances. Canadian mining companies have now received notice of an increase in price of 15 pct for small motors, forged steel balls

have been advanced about the same amount, while values and other fittings have been jumped even more.

New orders being taken for machinery and supplies are all subject to prices permitted by the price control agencies of the two countries. Local dealers state that the average of the principal items purchased by Canadian mines will eventually be up the 10 pct additional paid by United States mines. There has been no overall increase in the price permitted by the Canadian board, but changes are made upon the representation of manufacturers that prevailing prices are too low.

Plans of Canadian companies to bring new mines into production might have to be revised. It is estimated by companies specializing in mine plant and mill construction that present costs, subject to still

further increases, may be as much as 50 pct above prewar levels.

Increases on mining equipment granted by the OPA in the United States, effective Apr. 16, have not yet been fully reflected in Canadian prices, but it is believed that similar increases will be put into force here under WPTB Order No. 625, which went into effect on May 1. This order permits Canadian dealers or manufacturers to cover additional import costs. United States prices were advanced to 10 pct May 1, on what is called "construction equipment" by the OPA. Included in the price jump are rock drills and parts, sharpeners, forges, pneumatic hoists and a number of other items. It is stated that applications are pending for corresponding increases in Canada.

## Westinghouse Strike Ends

East Pittsburgh, Pa.

• • • About 2½ or three weeks will be required before the East Pittsburgh operations of Westinghouse Electric Corp. will reach normal. Conditions in the offices and plants of the company are reported to be appalling and a week and a half will be required to clean up the refuse and debris that has accumulated.

The move of the Motor Division from East Pittsburgh to Buffalo has been slowed up tremendously, and new schedules of getting production started at Buffalo will have to be worked out. While full production was planned at Buffalo for the fall of this year, it is believed that the strike has caused about a three- or four-month delay in the schedules, throwing full production into 1947.

The negotiating committee of the union and officials of Westinghouse have reached a settlement of the 115-day old strike recently. The company will make an increase of 18¢ an hr in the wages and salaries paid to employees represented by the union, and will establish a fund of 1¢ per hr per employee to be used towards narrowing differentials between men's and women's wage and salary rates. Day workers will receive a guaranteed fixed amount of the bonus to be included in their base rates. This fixed amount will represent between 42 and 75 pct of the day workers' bonus which was paid in December, 1945.

## Coming Events

- May 21-22 American Steel Warehouse Assn., Inc., annual meeting, New York.
- May 23 American Iron & Steel Institute, general meeting, New York.
- May 29-31 Machinery Dealers National Assn., Atlantic City, N. J.
- June 2-7 Society of Automotive Engineers, summer meeting, French Lick, Ind.
- June 3-5 American Gear Manufacturers Assn., annual meeting, The Homestead, Hot Springs, Va.
- June 13 Metal Powder Assn., spring meeting, New York.
- June 17 American Society of Mechanical Engineers, machine design group, first session, Detroit.
- June 17-18 American By-Product Coke Institute, first annual meeting, Seaview Country Club, Absecon, N. J.
- June 17-20 American Electroplaters Society, annual convention, Pittsburgh.
- June 24-28 American Society for Testing Materials, annual meeting, Buffalo.
- Sept. 10-14 American Chemical Society, exposition, Chicago.
- Sept. 11-12 Society of Automotive Engineers, national tractor meeting, Milwaukee.
- Sept. 16-20 Instrument Society of America, first conference and exhibit, Pittsburgh.
- Oct. 1-4. Iron & Steel Exposition, Cleveland Public Auditorium, Cleveland.
- Oct. 3-5 National Electronic Conference, Chicago.
- Oct. 3-5 Society of Automotive Engineers, aeronautic meeting and display, Los Angeles.
- Oct. 28-30 American Gear Manufacturers Assn., semi-annual meeting, Chicago.
- Nov. 7-8 National Founders Assn., annual meeting, New York.
- Nov. 18-22. National Metal Congress and Exposition, annual meeting, Atlantic City, N. J.



# Weekly Gallup Polls . . .

## Public Favors Merger of Armed Forces

Princeton, N. J.

••• A majority of Americans who have been following the discussions in Washington about merging the armed forces think the idea is a good one, according to George Gallup, director, American Institute of Public Opinion.

This poll, it should be noted, is not concerned with opinion on the details of setting up a unified command. It is a vote solely on the principle of unified command.

President Truman has of course spoken on behalf of unified command and of the Thomas-Austin-Hill Bill, designed to bring about a merger of the two services. Both Army and Navy officials have expressed approval of the theory of merger. The Navy splits with the Army and President Truman over how such a command should be set up. It does not approve the Thomas-Austin-Hill legislation as it now stands.

In measuring sentiment on the issue, the institute had field reporters ask:

"Will you tell me what your understanding is of the term 'unified command' for the armed forces of the United States?"

The six out of ten in the poll who indicated an understanding of the term "unified command" were then asked:

"Do you approve or disapprove of a unified command for the armed forces of this country?"

The replies:

	Pct
Approve .....	59
Disapprove .....	28
No opinion .....	13

The widely publicized discussions on the merger question and President Truman's support of the proposal before Congress have brought about an increase in the number favoring the idea of merger in the past five months.

However, the effect of the opposition of the Navy to present proposals for merger has made itself felt, as shown by the fact that the percentage favoring unified command today is still somewhat

below what it was in November 1945.

	Ap- prove Pct	Disap- prove Pct	No opinion Pct
November 1945 .....	64	23	13
December 1945 .....	52	34	14
Today .....	59	28	13

Veterans in the survey (the majority of them are army veterans) approve the idea of unified command by a substantial majority:

	Pct
Approve .....	65
Disapprove .....	29
No opinion .....	6

The better educated in the poll are found to be most in favor of the merger idea:

	Ap- prove Pct	Disap- prove Pct	No opinion Pct
College .....	68	25	7
High school .....	62	27	11
Grammar or no school .....	51	30	19

••• A slight majority of the American voting public say they would be willing to pay higher taxes to have their state governments pay a bonus to war veterans of their states.

As of the present about three fourths of the states have given some consideration to proposals calling for state bonuses for veterans. Four states—Connecticut, Massachusetts, Vermont and New Hampshire—have already made definite provisions for such bonuses.

Public thinking on the issue is measured by replies to the following question, asked by field reporters in all parts of the United States:

"Would you be willing to pay higher taxes to have your state government pay a bonus to war veterans of this state?"

The replies of everyone questioned:

	Pct
Yes .....	52
No .....	39
No opinion .....	9

The veterans in the survey are the ones who bring the proportion

## Would Pay Higher Taxes To Provide Bonuses for Ex-Gls; Want Equality in the Army

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in favor of paying higher taxes for bonuses above the 50 pct mark. They vote yes to the question by a large majority while the rest of the voting public, excluding veterans, approve the idea by just 50 pct.

Tables showing the veterans' vote on the question as contrasted with the rest of the public are presented below:

	Veterans Pct	Rest of Population Pct
Yes .....	63	50
No .....	33	41
No opinion .....	4	9

There are of course wide differences of opinion as to how much such a bonus payment should amount to. Among the 52 pct favoring the bonus some would pay out as little as \$20. Others would have the bonus amount to \$2000 or more.

However, the amount which comes closest to representing the views of all voters, the median average, is \$200. This includes the views of everyone in the survey. Two hundred dollars is the middle amount; the number who would favor a higher amount than \$200 is exactly equal to the number who would favor a lower amount, or nothing at all.

Four states are already reported to have provided bonuses for World War II veterans. Connecticut limited its bonuses to state employees. The amount is \$100. Massachusetts has provided a \$100 bonus for all veterans of the state. In New Hampshire the amount is \$10 for each month in service, the total to any one veteran not to go above \$100. Vermont has allowed its veterans \$10 for each month in the service, with the maximum bonus at \$120.

Other states have proposals for bonuses of one kind and another before them. These proposals are (CONTINUED ON PAGE 130)

## Pig Iron Production In Canada Increases To 68 Pct of Capacity

Toronto

• • • Canadian pig iron production in March increased to 158,049 net tons or average rate of 68.4 pct. of total rated capacity, from 143,171 net tons or 62 pct in the shorter month of February, but was under the 165,817 net tons reported for March, 1945. Output for the month under review included 124,477 tons of basic iron of which 4052 tons were for sale and the remainder for further use of producers; 15,892 tons of foundry iron of which 252 tons were for further use of producers and the balance for sale and 17,680 tons of malleable iron all for sale.

For the first quarter pig iron output totaled 444,905 net tons compared with 471,273 tons for the same period of 1945 and 442,053 tons in the 1944 period.

During March one blast furnace was blown in, making nine in blast and five blown out at the end of the month. Owing to the seriousness of the coal supply situation in Canada, due to the United States strike, the Steel Co. of Canada,

Ltd., Hamilton, is not blowing in the furnace on which repairs have just been completed. Blast furnace charges for March included 278,390 tons of iron ore; 23,862 tons of mill conder, scale, sinter, etc., and 5,722 tons of scrap iron and steel.

For March output of ferroalloys amounted to 8405 net tons, compared with 10,872 tons in February and 16,434 tons in March, 1945. Output included ferrosilicon, silicomanganese, ferromanganese, ferrochrome, chrom-x and ferrophosphorus. For the three months ended with March, cumulative production of ferroalloys totaled 30,155 net tons against 41,966 tons in the same period of 1945 and 44,642 tons in 1944.

Following are comparative monthly production totals in net tons:

	Pig iron	Ferroalloys
Jan. ....	143,685	10,878
Feb. ....	143,171	10,872
Mar. ....	158,049	8,405
Total .....	444,905	30,155

## Orders Election Held At Gary Sheet Mill

Washington

• • • In a ruling similar to that in the Packard Motor and Jones & Laughlin Steel cases, the National Labor Relations Board has ordered

an election held at the Gary Sheet & Tin Mill (Carnegie-Illinois Steel Corp.) Gary, Ind., to determine the bargaining agent for plant foremen.

"Although the foremen of the company are vested with certain management responsibilities with respect to production and maintenance of harmonious relations between the company and its rank and file employees," the board said, "such foremen, as distinguished from policy-making officials of the company, do not constitute such an integral part of management that they may not be segregated therefrom and recognized as a separate group for the purpose of collective bargaining."

"We find that all general foremen, assistant general foremen, turn foremen and order foremen . . . constitute a unit appropriate for the purpose of collective bargaining within the meaning of Section 9 (b) of the Act," it ruled.

The election must be held within 30 days. As in similar cases, Gerard D. Reilly was the dissenting NLRB member.

## Canadian Steel Output For March Shows Gain

Toronto

• • • Production of steel ingots and castings in Canada during March amounted to 249,117 net tons, or 82.5 pct of total rated capacity compared with 233,893 tons in February when the rate was 77.4 pct, and with 277,461 tons in March last year. The month's output included 240,589 tons of steel ingots and 8528 tons of steel castings. Steel furnace charges in the month under review included 121,457 tons of pig iron; 80,562 tons of scrap of consumers' own make and 73,339 tons of purchased scrap.

In the first three months of this year cumulative production of steel ingots and castings totaled 727,633 net tons, compared with 796,647 tons in the like period of 1945 and 747,577 tons in 1944. Following are comparative monthly production figures in net tons for 1946:

	Steel ingots	Steel castings
Jan. ....	236,479	8,144
Feb. ....	226,273	7,629
Mar. ....	240,589	8,528

**BRINGING HOME THE BACON:** Returning from Europe after obtaining first-hand information are: Julius Ochs Adler, *New York Times*; Edward T. Leech, *Pittsburgh Press*; Glenn Neville, *New York Mirror*; Robert Fuoss, *Saturday Evening Post*; Alan Barth, *Washington Post*; Frank Gannett, *Gannett newspapers*; Garner Cowles, *Des Moines Register and Tribune*; Hamilton Owens, *Baltimore Sun*; and Paul Bellamy, *Cleveland Plain Dealer*.







## Coal Shortages Continue Despite Coal Mine Truce

• • • With the coal truce affecting only essential users and with major questions in the controversy still to be settled, rail transportation, the automotive industry and movement on the Great Lakes continued to be curtailed this week. The top picture shows idle locomotives of the Illinois Central System; the middle picture a major Detroit fuel company's coal bins; and the bottom photo 24 of approximately 50 ships tied up in Buffalo's Lake Erie harbor.



## OPA Revises Pricing Provisions of Sheet And Strip for Resale

Washington

• • • Four changes in pricing provisions for warehouse resellers of prime hot-rolled and cold-rolled sheet steel and strip were announced by the OPA on May 9.

Increases provided by this action, effective May 10, should not affect prices of consumer products made from iron and steel, OPA said. The changes are:

(1) Warehouse resellers of these products made from selected rimmed stock or aluminum-killed steel may now include in their maximum prices the appropriate extras for these products.

OPA cost data have previously indicated that resellers of iron and steel products would be unable to absorb increases granted producers without severe hardship. This amendment, therefore, completes the Mar. 1, 1946, action permitting resellers to pass through the amount of increase in base prices at the mill level.

(2) Resellers making deliveries from their warehouses by truck at the request of buyers may include in their maximum delivered prices the amount by which truck delivery costs exceed freight costs. However, if truck transportation costs are less than freight, they will be required to adjust downward their maximum delivered prices.

Many resellers, unable to absorb present increased trucking costs without hardship, have already discontinued truck deliveries because of indications that these costs will be further increased. The change is made to assure buyers, who find truck deliveries more practicable and convenient than rail shipments, of continued truck delivery service.

(3) With the resumption of rail and water shipments of iron and steel products from eastern mills to Pacific Coast ports, the wartime provision permitting addition to Pacific Coast resellers' maximum prices of the additional cost of overland rail transportation has been eliminated.

(4) Resellers of tinplate may not include in their maximum prices the amount of an increase granted at the mill level on Mar. 1, 1946 (Amendment 15 to Revised Price Schedule No. 6).

OPA said that it has been advised that producers have not raised, and do not intend to raise, their ceilings on tinplate and that there has not been any cost increase incurred by resellers.

OPA also made a number of minor administrative changes. Examples are the change in definition of "iron and steel products" to include communication and transmission wire and to exclude certain small-sized channels and forgings from the coverage of this price schedule.

## High Alloy Casting Prices De-Controlled

Washington

• • • OPA on May 12 announced suspension of price control on high alloy castings which are used as component parts of industrial equipment. Anticipated in THE IRON AGE of May 9, this action, effective May 13, covers types of castings which are used in heat treating, chemical plant and oil refinery equipment.

OPA explained that continued price control over these castings would be a greater administrative burden than possible benefits warrant. Moreover, it was stated, the price increases that may follow due to recent substantial increases in labor costs for some producers, will have little or no effect on the cost of living or business costs. This is true because the industry's production capacity is greater than necessary to meet all anticipated demands and will help avert an excessive price rise. In addition, it was further pointed out, some castings are now selling below ceiling prices and there is no danger that the suspension will divert manpower from more essential production.

OPA also made two minor changes in its regulation covering exemption and suspension from price control of machines, parts, industrial materials and services (Supplementary Order No. 129) as amended by Amendment 13. The changes correct a previous error by placing steel and non-ferrous ship and marine castings, previously suspended from price control, under the proper heading in the suspension action.

## British Iron & Steel Institute Hears About Supersonic Detection

London

• • • The British Iron & Steel Institute held its annual general meeting here recently, with Dr. C. H. Desch being inducted as the new president. Technical sessions included discussions of fuel economy in iron and steel plants, supersonic testing and of overheating of steels.

The first annual Hatfield Memorial Lecture was delivered by Dr. George B. Waterhouse, professor emeritus of the Massachusetts Institute of Technology. Dr. Waterhouse chose as his subject the contributions of the late Dr. William H. Hatfield and his influence on metallurgical research.

Greetings to the British technical society from Walter S. Tower, president of the American Iron & Steel Institute, were delivered by Dr. Waterhouse.

Papers presented include:

"Fuel Problems in the Swedish Iron and Steel Industry," by M. Tigerschiöld.

"Problems in Fuel Efficiency," by C. Hulse and R. J. Sarjant.

"Fuel Utilization in Iron and Steel Works," by N. H. Turner and F. A. Gray.

"Detection of Cracks in Steel by Means of Supersonic Waves," by Dr. Desch, D. O. Sproule, and W. J. Dawson.

"Some Aspects of the Overheating of Steel Drop-Forgings," by H. J. Merchant.

"Overheating and Burning of Steels," by A. Preece, A. Hartley, S. E. Mayer and J. Nutting.

"Overheating and Burning of Nickel-Chromium-Molybdenum Steel," by W. E. Goodrich.

"Effect of Oxygen on the Isothermal Transformations of Steel, and a Suggested Test for Burning," by F. C. Thompson and L. R. Stanton.

"Some Experiments on Overheating," by J. Woolman and H. W. Kirkby.



## Wartime Auto Dealer Mortality Set at 22 Pct

Detroit

• • • The mortality among retail automobile dealers between 1942 and 1945 has been placed at 22 pct by W. L. Mallon, president of the National Automobile Dealers Assn. Testifying recently before the Senate Banking and Currency Committee at a hearing on the OPA extension bill Mr. Mallon said that 10,000 or more automobile dealers were put out of business by the war. When they will return to the trade, he continued, will depend on when conditions stabilize and financing can be arranged for them.

Other interesting facts were included in Mr. Mallon's testimony before the Senate Committee: If new cars had been available for sale between January, 1942, and January, 1945, and the 1941 new car sales averages were maintained during the period, estimated dealer sales volume would have been, exclusive of rationed cars, 14,354,674 units.

During the 1942-46 period the

number of passenger cars in use in the United States dropped from 29,601,774 to 25,301,345, a loss of 4,300,429 vehicles.

Automobile dealers estimate that service and supplies for each car in service amounts to a minimum of \$200 a yr.

Dealer mortality in the several states ranged from 11.8 pct in Virginia to 29.8 pct in Washington. The national average was 22.3 pct.

During 1945 only 7676 passenger cars were sold in the United States compared with 3,731,166 new car registrations during 1941.

## Farmers Will Pay 3 Pct More for New Equipment

Washington

• • • To cover advances in costs of steel and other material, OPA has granted an increase of 10 pct in the manufacturer's net realized price of farm equipment, effective May 10. The action provides for an increase of 5 pct in the manufacturers' list price of equipment. At the same time, it shortens the dealers' discount on farm equipment so

as to effect a 4 pct dealer absorption in the price increase.

For the farmer, OPA said, it means that, taking into consideration the revised retail prices of all equipment and of repair and replacement parts, which were not increased, the prices of farm equipment to farmers will be increased an average of approximately 3 pct.

## Harvester's Sales Drop

Chicago

• • • Total sales of International Harvester Co. for the first 6 months of 1946 fiscal year, carrying through Apr. 30, were 42.5 pct below those for the corresponding 1945, Fowler McCormick, Pres., reported at the company's annual meeting. He stated that it was certain that the net income for this fiscal year will be lower than for 1945.

Sales for the 6 months' period dropped from \$300,636,000 to \$172,745,000. The slip was attributed to virtual elimination of sales of war products and to the long farm equipment strike, which ended Apr. 15.

**FLIGHT ARRESTED:** Permitted to travel but a short distance before its power was shut off by radio control, the V-2 rocket at the left was launched during a preliminary test at White Sands, N. Mex. The photo at the right shows the crater blown in the desert by exploding fuel tanks of the rocket. The test was made in April.



## WAA Taking Steps To Eliminate Troubles In Surplus Tool Setup

Washington

• • • WAA officials and industry advisers are taking steps to iron out obstacles which hamper and even threaten to bog down the dealer-agency program by which government-owned machine tools and production equipment costing \$33 million have been disposed of at a return of 50c. on the dollar, it has been learned.

One such factor is government delay in paying commissions. At a recent meeting of the Metalworking Machinery Industry Advisory Committee with WAA representatives, complaints were made that most dealer-agents have received no commission payments since the program was inaugurated early in 1946. It was predicted that unless the situation were remedied immediately, by the end of May the number of active dealer-agents would be reduced from 1848 (as of Apr. 15) to about 500.

WAA is now moving to amend the dealer agreements to provide for payment on a monthly basis instead of quarterly as originally scheduled. Under the new plan, payment of commission would be made the month following completion of the sale.

Another retarding factor is slow progress in identifying items, especially special purpose and non-

standard, and tagging of equipment. Original plans called for appointment of local advisory committees to assist regional offices in this work but when the committee met in April, no appointments had been made. One plan had been worked out by the Detroit regional office by which dealers would be requested to assist in this work. This was held up, it was revealed, because of objection by a local labor union.

It is expected that Washington will shortly authorize regional directors to ask the dealers in their respective areas to assist in identifying, tagging, and preparing of one-line descriptions of machinery and equipment. Attention is also being given to requesting the assistance of industry consultants, without compensation, a plan which has worked well in the consumer goods and aircraft disposal programs.

## Monarch Backlog Higher

Sidney, Ohio

• • • Monarch Machine Tool Co. has reported net earnings of \$124,397 for the first quarter ended Mar. 31, after taxes and other charges, and subject to year-end adjustments. Net is equal to 59¢ per share of stock. Net earnings for the first quarter of 1945, including government contract settlement, repricing and renegotiation, were \$160,794, or 77¢ per share.

Net sales for the first quarter of

1946 were \$1,628,396, as compared to \$4,178,873 for the first quarter of last year.

Commenting upon the earnings figures, Wendell E. Whipp, president, Monarch Machine Tool Co., said, "The profit figure for the first three months reflects the greatly curtailed shipments due to work stoppages in the plants of our principal suppliers and the scarcity of many essential units supplied by others. This situation is now at least temporarily relieved and production should substantially increase. Our unfilled order backlog is higher than at Jan. 1."

## OPA Postpones Action On Machine Tool Prices

Washington

• • • General suspension of pricing restrictions on machine tools has been postponed until settlement of the coal strike, it was learned here this week. Decontrol of the bulk of machine tools still under ceilings had been scheduled for early May (THE IRON AGE, Apr. 29, 1946, p. 107). Dependable sources within OPA say, however, that the action definitely may be expected within 10 days following resumption of coal mining. The agency believes that once factories get back into production little or no price increase will result from decontrol of machine tools but expect prices to settle to a firm level.

The strike also seriously disrupted plans for systematic lifting of controls from most capital and producers goods. As scheduled prior to the mining trouble, decontrol in this field would have been effected in a series of "bites" with 2 to 3 weeks intervals. Under this plan decontrol would have been virtually completed by the end of June.

## Ford Contract Rejected

Chicago

• • • The widely publicized contract signed by Ford Motor Co. and international representatives of the United Auto Workers (CIO), which features penalties for unauthorized work stoppage, ran into a snag recently when members of local 551, Chicago, rejected its approval. The majority of the local's 2000 members also objected to clauses dealing with work standards, union security, seniority and vacations, an officer said.

**GUARDS OF A DIFFERENT COLOR:** American soldiers in Germany train natives, garbed in black military uniforms, for a Civilian Guard to augment the static guard system of security forces. They will be authorized to arrest German civilians only, are armed with a carbine and five rounds of ammunition.





## Atomic Progress Report

**I**T is now just nine months since the first atomic bomb fell on Hiroshima and, with hardly less shattering effect, upon the mind of mankind. Nothing that has been disclosed in those nine months has seriously undermined the first impression that, in the discovery of practical methods of producing nuclear fission, the human race has presented itself with the supreme challenge to its claim to be regarded as a rational species. Mankind now has, in sober truth, the means of annihilating human society overnight. And unless some comparable inventiveness is shown in devising institutions to turn the discovery to good uses, annihilation is the purpose for which it will certainly be used, sooner or later.

It is perhaps characteristic of our age that these portentous facts have not pre-empted the attention of all thinking persons. The problem of what to do with the atom has certainly not vanished from sight—very far from it—but it is not as much in the forefront of men's minds as its gigantic import might suggest. In America, perhaps because men and women there still have reserves of collective fright left, there has been, and still continues to be, a considerable volume of public discussion. But in this country, and still more on the Continent of Europe, the awful hazards of the atomic age are already, in most minds, set aside as one of those things that are far too big to be taken seriously. Apart from a few Americans, a few Russians and perhaps a few Englishmen, who can do anything about it? In Europe, there is a risk that the atomic bomb will become, if not a nine days' wonder, not much more than a nine months' horror.

Nevertheless, it must be insisted again and again that this is by far the biggest problem that the human race has to face; that the hazards though contingent, are not remote; that it can only be solved by an effort of collective will; and that no such effort can be made without the faith and energy of the ordinary man.

What advance is being made, if any, towards the erection of effective safeguards against the mass suicide of the human race?

**T**HE first exhibit approaches the problem on the moral plane. It is the report of a commission appointed by the British Council of Churches. The membership of the commission was widely selected and distinguished, and the report is thoughtful and penetrating. Yet it cannot be said with any honesty that it carries the matter a great deal further. The problem, in fact, must inevitably baffle the moralists. Here is Man, with a great new power for good or evil in his hands, but with his old sinful character. It is the familiar problem of morality suddenly presented in an intense degree. But it is still the old familiar dilemma that has existed ever since the first man ate of the fruit of the tree of knowledge. To expect the churches to find a new answer, to expect them to do anything other than redouble their efforts and reaffirm their faith, would be to make the principles of Christianity as subject to new discovery as those of physics.

The second contribution comes from the technicians. This is a report prepared for the United States Government by a board of consultants of whom David E. Lilienthal (widely known as chairman of the Tennessee Valley Authority) was chairman. This board was set to answer the problem whether it was possible to devise a scheme for the international control of atomic energy, and their report deserves to be very widely read; it is both clear and authoritative, realistic yet hopeful. The Lilienthal Report does not by any means solve the problem it poses; but it does succeed in narrowing it down to dimensions which may not be wholly unmanageable.

**T**HE report starts with the proposition, which is indeed almost self-evident, that to leave the development of atomic energy in the hands of competing, suspicious and

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uncontrolled national states is to court disaster. The authors go further; they say that "there is no prospect of security against atomic warfare in a system of international agreements to outlaw such weapons controlled only by a system which relies on inspection and similar police-like methods. The reasons supporting this conclusion are not merely technical, but primarily the inseparable political, social and organizational problems involved in enforcing agreements between nations each free to develop atomic energy, but only pledged not to use it for bombs . . . So long as intrinsically dangerous activities may be carried on by nations, rivalries are inevitable and fears are engendered which place so great a pressure upon a system of international enforcement by police methods that no degree of ingenuity or technical competence could possibly hope to cope with them."

The Board consequently set themselves the task of "discovering what other measures are required in order that inspection might be so limited and so simplified that it would be practical and could aid in accomplishing the purposes of security."

**F**ORTUNATELY, they have been largely successful in their search. They state, with the backing of scientific authority that it would be hard to challenge, that uranium is, and is likely for a long time to remain, the only raw material from which fissionable substances can be prepared, which at once greatly simplifies the control of the original sources. They further state that U235, the fissionable (CONTINUED ON PAGE 132)

## Rolling Mill Operation and Design Features ISE Meeting

### Chicago

• • • Rolling mill operation and design provided broad technical discussions at the annual spring conference of the Assn. of Iron & Steel Engineers here May 6 to 7.

About 400 attended the 2-day session, which included an inspection trip to the government-owned South Chicago plant of Republic Steel Corp., the world's largest electric furnace installation.

C. P. Hammond, superintendent rolling mills, Atlas Steels, Ltd., Welland, Ont., led off the Monday morning session by tracing historically various methods and consideration in rolling rounds. He detailed progress in eliminating causes of variation in the product through improved design and equipment including extreme care in design of grooves to give equal distribution of stock, installation of mills sufficiently rigid to eliminate spring, incorporation of bearings to give a minimum of journal and thrust wear, and improved rolls and guide equipment. Hammered rounds, hand-rolled rounds, and guide rounds formed the major sections of his talk. He pointed out that hammered rounds, which first were made on flat dies, and more recently on swage dies, were still being produced under a hammer or press, particularly in the case of large size highly alloyed steel rounds where quantity does not warrant expensive heavy rolling

equipment. Years were required, he said, to educate tool steel customers that guide rounds were equal to or better than hand-rolled rounds, but the constant physical skill required, and improved guide equipment, which was described, have greatly increased production of the former.

T. N. Sloan, die roll designer, Republic Steel Corp., Buffalo, brought out the problems involved in die rolling, which he defined as "the process of rolling a string of blanks, each of which has varying cross sectional area produced by heavy reductions and specified center to center lengths. When sheared to length blanks are of identical shape." The automobile industry in the twenties provided the first mass consumer large enough to justify roll costs. First, rear axles, then front axles, with allowance for flash removal, and later gear shift levers, ring gear blanks, wheel spokes and brake pedals were rolled. Development of the flashless blank in 1931 made possible acceptance by forgers of blanks for crankshafts, camshafts, support arms and steering arms, and led to production of 1 million tons of die rolled articles in the next 15 yr.

J. G. Meenan, design engineer, United Engineering & Foundry Co., Pittsburgh, detailed factors in design of mill tables, both with line shaft driven rollers, and with individually driven rollers. Special attention was given to blooming and

slabbing mill tables, where he stressed the importance of lubrication, and provision for removal of bearings, roller gears and line shafts. Individually driven rollers, most common in hot runout tables, on curved tables and where space does not permit line shaft operation, may have broader application he indicated.

During the war, he said an aluminum strip mill was installed which was equipped throughout with individually driven rollers. The rollers have double taper which serves to center the strip and supports it at only two points. Preliminary studies are now in progress on the advisability of replacing front and back tables of a slabbing mill with individually driven rollers, but the research is not sufficiently advanced to justify comment, he declared.

The Monday afternoon session was devoted to a symposium on rolling mill bearings. Proprietary aspects were emphasized and relative advantages outlined. Paul Haager, assistant chief engineer, Industrial Div., the Timken Roller Bearing Co., Canton, Ohio, traced the development of "balanced proportion" bearings for heavy duty equipment. Discussing safe working capacity of a bearing as applied to roll necks he said sudden overloads within static capacity of a bearing do not usually injure any of the rolls or working surfaces. Sudden overloads up to five to six times normal working capacity will not injure any of the roller or race surfaces.

In cases where sudden shock loadings can be anticipated with reasonable accuracy, an actual figure of eight to ten times the normally imposed load has been known to exist without actual failure of the bearing, he said. However, excessive overloading, when considered as a continuous condition, will decrease the tonnage life of the bearing. In application of bearings to continuous strip mills he emphasized the importance of accuracy in roughing stages to keeping close gage tolerances in succeeding passes, and the selection of a bearing which will give acceptable life and provide sufficient rigidity to

**FIT FOR A KING:** These Nissen huts built by the Japs under American Army supervision overlook the Emperor's palace grounds in downtown Tokyo. They will be the homes for wives and families of servicemen stationed in Japan with the Army of Occupation.





maintain accurate pass control and accurate gage in the material rolled.

Applications of composition bearings, including uses other than roll necks, were described by W. A. Rankin, engineering division, bearings and gears, Gatke Corp., Chicago. He said that, although composition bearings commonly are associated with water lubrication, oil or grease has been satisfactorily used in many cases. Advantages of composition bearings, he said, stem from the glass smooth surface resulting from the mold which provides a low coefficient of friction and is wear resistant. Resilience allows lubrication efficiency, compensates for minor misalignment and absorbs severe shock and vibration, he declared.

H. L. Smith, Federated Metals Div., American Smelting & Refining Co., Pittsburgh, whose topic was "Metallic Bearings," emphasized design and machining considerations. Emphasis, both in the formal talk and in subsequent floor discussion, was placed on the proper introduction of lubrication into the bearing, and particularly on the use of oil pockets.

A. J. Langhammer, president, Amplex Div., Chrysler Corp., Detroit, prepared a detailed technical discussion on metal powder self-lubricating bearings. Important aspects of bearing seals were outlined in a paper by L. G. Krug, Chicago Rawhide Mfg. Co.

At the Tuesday afternoon meeting, Norman Urquhart, Ft. Pitt Bridge Co., Canonsburg, Pa., presented a design for a new one-way fired soaking pit which has neither regenerators nor recuperators and has a net furnace volume equal to or greater than 20 cu ft per ton of metal charged. The pit is a standard oblong box in shape with burner inlet and flue outlets located in the same wall on one of the narrow sides. Oil, natural gas, or coke oven gas have been used for firing in pits thus far constructed. The speaker pointed out that the elimination of checkers provides space for combustion equipment and permits enlargement of pit area. He said that the pit will heat ingots uniformly at all sides, with temperature variation between the top and bottom dependent on the cover.

F. E. Crever, Steel Mill Div., Industrial Engineering Div., and T. M. Linville, Motor & Generator

Engineering Div., apparatus dept., General Electric Co., Schenectady, were authors of a paper exploring aspects of speed stability for continuous mills. The paper explored various means of overcoming the impact speed drop on various products as the front of the metal hits each stand in continuous mills setting the relationship between the stands, causing stretching or looping in some instances. Emphasis was placed on proper dc motor design to suit each particular application, with possible auxiliary apparatus where needed.

It was pointed out that in many cases looping may be minimized by high inertia motors with low resistance and inductance, following demonstration that although a motor may have good steady state speed regulation it may not have low impact speed drop. The importance of the problem was emphasized on tandem multiple stand rod mills and tandem tube mills. On the latter, use of flywheels was discussed, providing no recovery from impact speed drop and a smooth transition from no load to full load speed.

In connection with speed regulators it was stated that unless the transient as well as the steady state speed change can be minimized to a high degree the performance is not improved and the looping tendency between stands may actually be accentuated. High inertia, such as provided by a flywheel, plus a fast regulator, must be incorporated, requiring much special equipment, to overcome this tendency, and this is not always justified, it was stated. Tests were outlined involving the use of a fast amplidyne exciter to

vary the motor field temporarily, as an alternative to a flywheel, but these indicated to be unsatisfactory without further study, or unless inertia was added in some other manner.

R. W. Graham, assistant division superintendent, slab and plate mills, Carnegie-Illinois Steel Corp., Muncie, Pa., discussed a simplified method of steel providing to improve yield. He argued that older methods were faulty in that they assumed yield without correction for ingot length, and outlined a new method, involving only simple addition in calculation, taking into account ingot length.

J. N. Imel, Jones & Laughlin Steel Corp., Pittsburgh, detailed material and design consideration in a cleverly illustrated lecture on bar mill housings and equipment.

## AISI Elects Directors

New York

••• At the annual meeting of members of the American Iron & Steel Institute, held at the institute offices May 6, 10 men were elected to the board of directors, each for a term of 3 yr. They are: H. G. Batcheller, Allegheny Ludlum Steel Corp.; B. F. Fairless, U. S. Steel Corp.; W. W. Holloway, Wheeling Steel Corp.; Elton Hoyt, 2nd, Pickands, Mather & Co.; H. Niedringhaus, Granite City Steel Co.; E. L. Parker, Columbia Steel & Shafting Co.; Frank Purnell, the Youngstown Sheet & Tube Co.; C. F. Stone, Atlantic Steel Co.; Leigh Willard, Interlake Iron Corp.; R. W. Wolcott, Lukens Steel Co.

ALL ABOARD: Tokyo railroad station badly damaged in air raids is typical of construction now underway in Japan. Tracks and trains escaped damage.



## U. S. Sale of Surplus War Stocks On Continent Shows General Upswing

### London

• • • Large-scale purchases of surplus engineering equipment, tractors, trucks and medical supplies by British buyers for domestic use and for export to British overseas areas have opened up a market for much of the \$1,500,000,000 worth of U. S. war stocks already declared surplus and for sale on the Continent. The total declared U. S. surplus on the Continent is expected to exceed \$3,000,000,000.

Within the past 60 days, British buyers coming into the market in strength have signed contracts for \$855,000 worth of surplus items, made firm bids for an additional \$1,000,000 worth, and placed requests for other surplus goods amounting to \$3,500,000, the Office of the Foreign Liquidation Commissioner announced recently.

British buyers' interest, linked closely with the British world-wide export drive, centered mainly on transportation and construction equipment, textiles, chemicals and

medical supplies. Purchases to date include tractors, power shovels, cranes, trucks, ambulances and hospital supplies. Payment is made in dollars or sterling.

A general upswing in surplus sales to foreign governments has resulted from the recent long-range credit terms made available to Central European countries by the U. S. Treasury to finance surplus purchases for reconstruction and rehabilitation work.

Particularly active in the market are the Scandinavian Purchasing Mission. Finland already has bought almost \$5,000,000 worth of surplus against her recent credit of \$10,000,000. New buyers include Czechoslovakia, now negotiating for \$5,000,000 worth of railways equipment, trucks and medical supplies, and Poland which in addition to recent purchases amounting to \$2,000,000 has placed orders for an additional \$1,000,000 in tools, jeeps, trailers, and oil tankers.

Total surplus disposals in Cen-

tral Europe now have reached \$125,000,000, OFLC says. This represents a 64 pct recovery on the estimated original U. S. investment of \$193,936,600 for the stocks already sold. By far the major buyer is UNRRA which received \$70,000,000 worth of surplus stocks for its rehabilitation program in Europe.

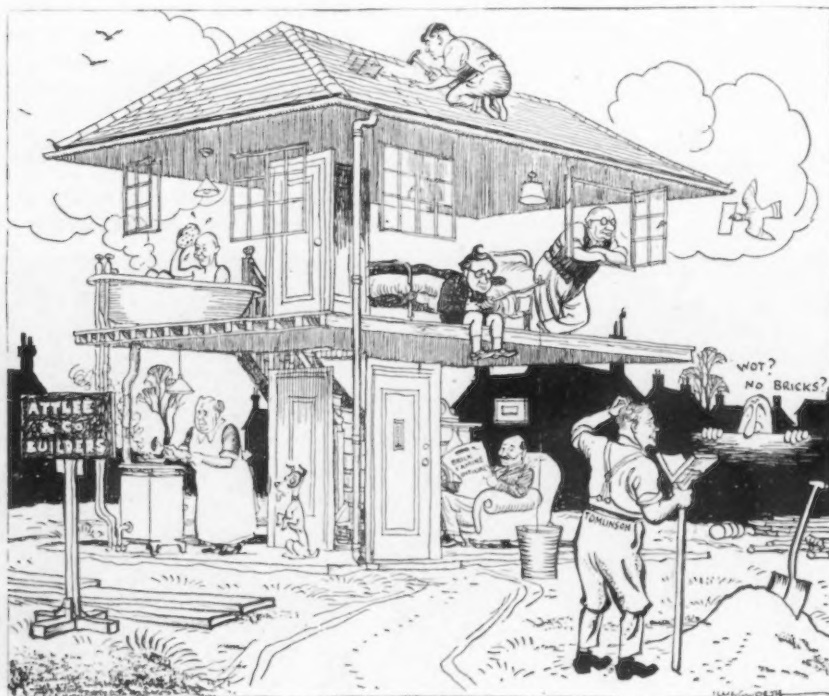
French surplus purchases, which are screened by a French Government agency to fit them into the country's overall import program, now amount to \$20,000,000. Among principal French purchases are engineering construction material, cranes, power shovels, engine assemblies, trucks, medical supplies, sheet steel and 576 tractors of all types.

Belgium, buying against her \$45,000,000 reverse lease-lend credit, has received surplus cotton, cranes, tractors, trucks, 10,000 gallon tanks, bandages, telephone poles, newsprint and paper pulp for a total of \$9,000,000. The Netherlands have purchased \$4,500,000 worth of carpentry and engineering tools, tractors, aircraft, tires, jeeps and engine assemblies, and swift buyers have taken stocks of cloth, jeeps, blankets, aircraft and parts, tires and radio parts amounting to \$3,000,000. Other buyers include Norway \$1,400,000, Sweden \$1,134,000, and U. S.-supported relief and charitable organizations which have bought more than \$2,000,000 worth of relief supplies and have placed orders for an additional \$5,000,000.

A brisk interest in commercial type aircraft and floating equipment is reported by OFLC. A first offering of Army and Navy harbor craft and port equipment was quickly sold for \$4,100,000. This included barges, launches, harbor tugs, fire control boats, oil tankers and floating cranes, with Poland, the Netherlands and Belgium the principal buyers.

More than 100 former Army transport planes have been divided between 11 European countries to help re-establish the air network of the Continent. In all 230 surplus planes, including trainers and small liaison craft, have been disposed of in addition to spare parts and engines.

**GOOD ENGLISH HUMOR:** This cartoon from Transatlantic Daily Mail depicts the situation in England where bricklayers were demobilized from the Army but some one forgot the brickmakers.





## Failure to Agree On Rates Halts Canadian Shipments to Russia

Ottawa

••• Owing to failure in reaching agreement on interest rates and other fiscal arrangements, shipments of Canadian machinery and equipment totaling between \$25,000,000 and \$30,000,000 will not be made to Russia. This equipment, machinery and engines which was made or ordered for Russian account, was turned over to War Assets Corp., for disposal when Russia failed to meet the terms required by Canada, and are being acquired by eager Canadian buyers.

During the war years, when Russia was receiving mutual aid from Canada considerable quantities of capital goods, equipment, machinery and tools were ordered, which could be used in the postwar period as well as during the war. Owing to large quantities not being consumable goods, in the sense of other war supplies, Canada received from Russia an understanding that anything not actually shipped or delivered at the end of the war would be purchased at prices and under conditions to be mutually agreed upon. When the war ended, however, Russia demanded an interest rate much below any granted to other foreign countries. Negotiations dragged along for months, until finally Canada called off the whole deal and is now disposing of the supplies to domestic buyers. Following are a list of some of the items that were produced for Russia and are being disposed of in Canada:

1400 flatcars .....	\$7,000,000
Electric motors & controls.....	5,100,000
Mobile cranes, etc. ....	3,600,000
Air compressors .....	3,500,000
Mine hoists .....	3,200,000
Steam cranes .....	1,000,000
Aluminum .....	1,400,000

Most of the remainder represents machinery, tools, and diesel engines, and in addition there are magnesium, aircraft alloy steel and steel rails.

## OPA Grants Interim Boost

Washington

••• Indicating that a greater increase will be needed under its standards, OPA has given manufacturers of armored cable an interim price boost averaging approximately 14 pct, effective May

8. The increase will apply until a final adjustment is authorized upon completion of an industry survey now underway.

Resellers were authorized to pass on the dollar-and-cent increase in their net costs resulting from OPA's action.

## National Metal Show Holds Meeting Nov. 18

Cleveland

••• The 28th annual National Metal Congress and Exposition will be held in Atlantic City's municipal auditorium for five days beginning Nov. 18, marking the first time in 5 yr that the event has been held in the East, according to W. H. Eisenman, managing director of the event.

Meeting jointly during the NMCE will be the American Society for Metals, the Iron & Steel Div. and the Institute of Metals Div. of the American Institute of Mining & Metallurgical Engineers, the American Welding Society and the American Industrial Radium and X-Ray Society.

Mr. Eisenman said floor plans for the regular 1946 Exposition at Atlantic City have been sent to organizations participating in the 1945 event, which was held in Cleveland. It is anticipated that

approximately 70 pct of the 1946 NMCE attendance will be from the eastern part of the country.

On the basis of previous attendance figures for NMCE meetings in Atlantic City, it is estimated that more than 25,000 executives, engineers and production men will visit the exposition and attend technical sessions of the five societies meeting during the five-day period.

## Coal Truce

(CONTINUED FROM PAGE 91)

present rate until coal shipments are received.

Three of Republic's blast furnaces in Youngstown which were to have been closed down May 13 will be kept in partial production by emergency means until coal shipments arrive.

Youngstown Sheet & Tube Co. plans to operate two blast furnaces, six openhearth and a bessemer on reduced schedule at Campbell, and two blast furnaces and 10 openhearth at Brier Hill. Little change in steel making, except for the worse, is anticipated.

J & L, Otis Works, here, with adequate coal supplies for May, will continue at the present level until further notice. After June 1, however, an almost complete shut-down will be in order.

OFF AGAIN, ON AGAIN, OFF AGAIN! These men at Ford Motor Co. will not know whether they are going or coming if strikes continue throughout the country. Reason for the latest "walk-away" from the plant is the coal shortage.



## Industrial Briefs . . .

• **NEW COMPANY**—R. R. Lawson has formed a new company and purchased the Ellwood Ivins Steel Tube Works, Inc., Philadelphia. The new corporate set-up includes R. R. Lawson, president; Theodore Heske, vice-president and general manager, and Wayne A. Slater, secretary and treasurer.

• **PARTNERSHIP**—Sam Lebowitz, formerly with Commercial Heat Treaters, and Frank Lothary, formerly with the Kellex Corp., have formed a partnership. The new firm will be known as AAA-1 Metal Processing Co., located at 219 Second Ave., New York. They will specialize in heat treating, case hardening, carburizing, etc.

• **PITTSBURGH GEAR SOLD**—The Pittsburgh Gear & Machine Co., with its plant located at 27th and Smallman Sts., has been acquired by Lou Mervis & Associates, and operations will continue without interruption.

• **FOLLANSBEE DIVISION**—Follansbee Metal Warehouses is the name of a new division of Follansbee Steel Corp., Pittsburgh, in which has been consolidated the present warehousing services of the corporation.

• **NEW CORPORATION**—Formation of a new company to be known as the Parkway Foundry & Machine Corp. has been announced by the principals, Emile C. Mathis, president of the Matam Corp., Long Island City, N. Y., and Amicus Most, general manager of the old Parkway Foundry Co., New York. The new company will produce nonferrous castings by the sand, permanent mold and centrifugal methods.

• **LURIA MOVES OFFICES**—Luria Bros. & Co., Inc., has moved its Chicago offices to 100 West Monroe St., from 310 S. Michigan Ave. The new telephone is FRAnklin 6630.

• **BUYS WAA PLANT**—Kellett Aircraft Corp., manufacturers of helicopters and metal products, has arranged to lease the large War Assets Administration-owned surplus war plant at North Wales, Pa. The lease arrangement extends for 5 yr. Kellett also will have an option to purchase the property during the period.

• **NEW SALES DISTRICT**—R. E. Pinniger, vice-president and general manager, the Cyclone Fence Div., American Steel & Wire Co., has announced establishment of a separate sales district for Michigan, with headquarters in Detroit. E. B. Wilhelm has been named manager of the new district.

• **BOBBI-KAR PLANT**—Two buildings formerly operated by the Consolidated Vultee Aircraft Corp. for the production of war planes will be used for the manufacture of Bobbi-Kars by the Bobbi Motor Car Corp. at San Diego, Calif., according to the War Assets Administration.

• **PITTSBURGH OFFICE**—The Aetna - Standard Engineering Co., Youngstown, has announced the appointment of William B. Todd, assistant to the president, to head its new Pittsburgh office which was opened recently. The office will be located at 1714 Oliver Building, Pittsburgh 22.

• **NEW STAMPING CO.**—The O. K. Stamping Corp. has recently been organized in Fort Wayne, Ind., to do contract work in metal stamping and production. Principals in the new corporation are F. A. McGuire and J. P. McGuire, owners of the O. K. Machine Co., and H. J. Cocks, a partner in the former Morco Mfg. Co., all of Fort Wayne, Ind. The company has purchased the building previously owned by the Morco concern. Mr. Cocks will serve as general manager.

## Announces Formation Of New Engineer Group

*Detroit*

• • • **Announcement** has been made of the formation of a new engineering society called "The American Society of Body Engineers, Inc." by its president, I. Louis Carron, body engineer of the Detroit Harvester Co. The society has been organized as a nonprofit corporation with national headquarters in the Rackham Memorial Bldg in Detroit. This is an organization composed entirely of leading body engineers from practically all the companies in the automotive industry.

Recognition of the fact that body engineering has reached the status of a profession is seen in the recent announcement of the University of Michigan that this fall it will start a course in body engineering which will lead to the granting of a degree in engineering.

A technical convention will be held in October by this society in the Rackham Memorial Bldg. with Carl W. Cenzer as general chairman. Plans are already well underway.

## Leases Iron Ore Mine

*Washington*

• • • **The War Assets Administration** has announced that P. M. Chamberlain, Jacksonville, Tex., has leased for a 6-month trial period the North Basin iron ore mine and facilities near Linden, Tex., operated by the American Rolling Mill Co. Under the terms of the lease it may be renewed for 5 yr.

The plant was used during the war to supply iron ore to the Sheffield Steel Co., Houston, Tex., a subsidiary of Armco. Mr. Chamberlain plans to use the facilities to furnish iron ore to blast furnaces and cement manufacturers in Houston and Birmingham, Ala. The plant and facilities are located on a 4-acre site and cost \$497,086. The present fair value, WAA said, is estimated at \$268,705.

The lease provides for a rental based on 50¢ a gross ton of all ores or concentrates shipped with a guaranteed minimum of \$1000 a month.



## Construction Steel...

### New York

• • • Fabricated steel awards this week included the following:

8000 Tons, Chicago, ore, coke and limestone pockets, Carnegie-Illinois Steel Corp., to American Bridge Co., Pittsburgh.

2047 Tons, Los Angeles, Terminal Island Freeway crossing over U.P. SP, and PE RR tracks at Anaheim Street, California Div. of Highways, through E. W. Elliott Construction Co., to Consolidated Steel Corp.

1894 Tons, Los Angeles, four bridges on Pacific Coast Highway between Dominguez Channel and San Gabriel Ave., California Div. of Highways, through Jas. I. Barnes Construction Co., to Columbia Steel Co.

1372 Tons, Los Angeles, Terminal Island Freeway crossing over Union Pacific RR tracks, California Div. of Highways, through Macco Construction Co., to Columbia Steel Co.

800 Tons, Vernon, Calif., Pacific Press Co., printing plant, through Austin Co., to Columbia Steel Co.

475 Tons, Chicago, Englewood Station engine house reconstruction, to Bethlehem Steel Co.

400 Tons, Vernon, Calif., Pacific Press, Inc., warehouse to Virginia Bridge Co., Roanoke, Va.

400 Tons, Phoenix, Ariz., Gold Water department store, through Dell Webb, to Bethlehem Pacific Coast Steel Corp.

361 Tons, San Diego Co., Calif., two bridges across San Luis Rey River and Keys Canyon, California Div. of Highways, through Spencer Webb to Bethlehem Pacific Coast Steel Corp.

350 Tons, Cherokee, Iowa, bridge W-450-3, Illinois Central System, to American Bridge Co., Pittsburgh.

325 Tons, Philadelphia, bank building, Real Estate Trust Co., to American Bridge Co., Pittsburgh.

270 Tons, Kingman, Ariz., five gate frames for fixed-wheel gates, Davis Dam, Bureau of Reclamation, Denver, to Lakeside Bridge & Steel Co.

250 Tons, Holden, Me., state bridge to Phoenix Bridge Co.

200 Tons, Rutland, Vt., crane runway extension, Vermont Marble Co., to American Bridge Co., Pittsburgh.

125 Tons, Lexington, Ky., men's dormitory, Hargett Construction Co., to American Bridge Co., Pittsburgh.

• • • Fabricated steel inquiries this week included the following:

630 Tons, Wasco Co., Ore., Mill Creek bridge on Warm Springs Highway, Oregon State Highway Commission, Portland, bids due May 16.

284 Tons, Clallam Co., Wash., two bridges over Soleduck River, PSH 9, Director of Highways, Olympia, bids to open May 21.

276 Tons, King Co., Wash., PSH 15 bridge over Great Northern RR tracks, Director of Highways, Olympia, bids to open May 21.

150 Tons, Deer Park, Texas, storage tanks, C. F. Braun, general contractor.

130 Tons, San Diego, overcrossing on Route 77 at Friars Road, California Div. of Highways, Los Angeles, bids to open June 6.

• • • Reinforcing bar awards this week included the following:

836 Tons, Friant, Calif., miscellaneous bars, Bureau of Reclamation, Denver, Inv. A-48, 776-A, to Bethlehem Pacific Coast Steel Corp.

500 to 600 Tons, Kansas City, Mo., retail stores for Sears, Roebuck & Co., to Construction Products Co., dealer for Sheffield, through Swenson Construction Co.

500 Tons, Huron, Ohio, Eastern Co-op Mill Assn., grain elevator to Carnegie-Illinois Steel Corp., through James Stewart & Co., Inc., Chicago, contractor.

250 Tons, Dayton, Ohio, sewage disposal plant, to Dayton Builders Supply Co., Dayton.

200 Tons, Omaha, Neb., Union Pacific RR, to Truscon Steel Co.

125 Tons, Chicago, Goldblatt Bros., store addition, to Ceco Steel Products Corp., through J. W. Snyder Co., Chicago, contractor.

100 Tons, Newark, Ill., 33 bridges, to Carnegie-Illinois Steel Corp.

• • • Reinforcing bar inquiries this week included the following:

775 Tons, Zanesville and Newark, Ohio, relocation of Baltimore & Ohio tracks.

700 Tons, Toledo, New York Central and Baltimore & Ohio lakefront dock.

527 Tons, Peoria, Ill., power company project.

494 Tons, Multnomah County, Ore., five structures on Front Ave. section of Pacific Highway West, Oregon State Highway Commission, Portland, bids in May 15.

## Power Boiler Prices Up

Washington

• • • OPA has given manufacturers of steel power boilers and equipment, which are still under price control, a 16 pct increase over their maximum prices in effect on June 1, 1941. The boilers covered by this action, effective May 13, range from small boilers used by tailors and cleaners to generate steam for pressing to larger boilers used by industrial plants to generate power, steam and heat. Among the many other types of boilers affected are those used by dairies and cheese processing plants in processing milk.

Resellers are permitted to add the same amount in dollars and cents to their maximum prices as their costs are increased by their suppliers. This is necessary, OPA explained, because resellers' margins are extremely low and it is doubtful that they could absorb any substantial part of the increase.

## Producer Diversifies Line

Philadelphia

• • • The Yale & Towne Mfg. Co. will enter the field of electric home appliances, it was announced over the week-end by W. Gibson Carey, Jr., president. Anthony B. Cassidy, for the past three years assistant to the president for marketing, will be director of appliance sales.

The first appliance that will be offered is a patented electric iron having a dual sole plate which enables the user, by tilting the handle forward, to use the toe section for

400 Tons, Iowa Falls, Iowa, Ralston Purina Co., grain elevator.

300 Tons, Milwaukee, Harnischfeger Corp., plant building.

280 Tons, Mobile, Ala., Pearl River Locks 1 and 2, bids in May 15.

243 Tons, Redding, Calif., bridge across Sacramento River, California Div. of Highways, Sacramento, bids to open June 5.

235 Tons, San Joaquin County, Calif., three bridges between Calaveras River and Lodi, California Div. of Highways, Sacramento, bids to open June 5.

220 Tons, Bath, N. Y., flood control project.

164 Tons, King County, Wash., PSH 15 bridge over Great Northern RR tracks, Director of Highways, Olympia, bids to open May 21.

125 Tons, Valparaiso, Ind., Valparaiso University building.

125 Tons, Reading, Pa., Reading Co., railroad bridge.

124 Tons, Clallam Co., Wash., two bridges over Soleduck River, PSH 9, Director of Highways, Olympia, bids to open May 21.

100 Tons, Roanoke, Va., Norfolk & Western RR.

ironing pleats, ruffles, folds and other "hard-to-get-at" places on garments and fancy work. A national sales headquarters will be established in the Empire State Building, New York.

A selected list of jobbers will be appointed throughout the country with sales to retailers made only through franchised jobbers. A few test territories will be opened in the fall.

## Institute Holds Election

Cleveland

• • • At a recent meeting here new officers and directors of the Material Handling Institute, Inc., were elected as follows: President, Sheldon K. Towson, president, The Elwell-Parker Electric Co., Cleveland; vice-president, Samuel W. Gibb, general sales manager, The Yale & Towne Mfg. Co., Philadelphia; secretary-treasurer and counsel, C. M. Dinkins, Washington.

Sheldon K. Towson was elected chairman of the board of directors and Samuel W. Gibb was elected vice-chairman. Other officers elected to the board include: L. C. Backart, president, The Rapids-Standard Co., Inc., Grand Rapids, Mich.; H. A. Carter, president, The Geneva Metal Wheel Co., Geneva, Ohio; M. W. Heinritz, Philco Corp., Storage Battery Div., Trenton, N. J.; L. J. Kline, vice-president, The Mercury Mfg. Co., Chicago; Lester M. Sears, president, Towmotor Corp., Cleveland; Walter C. Stuebing, president, Lift Trucks, Inc., Cincinnati.

# MACHINE TOOLS

... News and Market Activities

## Domestic Machinery Volume Up in April

• • • Based on a bird's-eye view, but much to the pleasant surprise of many an informed observer, forthcoming statistics on the machine tool industry's April activities are expected to reveal that orders were higher than the March aggregate by a fair amount; that April shipments were also better than March and that domestic orders, rather than foreign, led the way.

While reports are far from complete, the definite trend of domestic orders is shown by a comparison of March and April figures, indicating that foreign orders in March constituted 27 pct of the total, but in April made up only 21 pct of the total.

Unfilled orders will probably show more semblance of parity. Unfilled orders in March made up 29 pct of the total; but in April are expected now to comprise about 27 pct of the total.

From this preliminary survey, it may be inferred with some degree of safety that some machine tool buying was done to get under the price wire in April, but more than a few builders are reporting that business continues to come in.

At the same time, sources in the trade feel that the government-owned machine tool surplus might have been more of a factor in April business, had a more efficient organization been handling it. In other words, the true potency of the surplus will never be felt as a market factor.

Electrical equipment prices are posing something of a problem for many segments of the industry, since some prices have not been set and machine tool builders quoting on foreign business have another unknown in their price equations. It has been reliably reported that electrical equipment increases will be about 15 pct, and carry escalator clauses along with a 20 pct possibility. Machine tool builders themselves, however, are still showing reluctance to raise prices except on limited number of items to anything approaching the authorized 20 pct.

According to reports, Russia is

still anxious to buy machine tools, although it is believed they cannot have so much in the unfilled order category. At the same time some big orders are coming in from South America.

In the East, some segments of the industry report the steel situation unusually tight, and casting supply quite uncertain because of the foundry situation, stemming from inadequate supplies of pig iron, scrap and coke. Simultaneously, the continued liberal supply of government-surplus tools is making for indecision among new tool buyer prospects. Faced with a number of pressing problems, some segments of the machine tool industry have only a limited incentive toward domestic business at this time. Many, however, are pushing toward export business. By and large in the eastern manufacturing centers, manufacturers aren't buying anything they can do without.

In Cincinnati, prolongation of

## Announces Officers For Morse Twist Drill Co.

Springfield, Mass.

• • • James Y. Scott, president, Van Norman Co. here has announced that Van Norman has purchased substantially all of the outstanding stock of the Morse Twist Drill & Machine Co., New Bedford, Mass.



MR. WRIGHT

Morse Twist Drill will be operated as a separate corporation, and will remain in New Bedford. Officers of the new management are as follows: James Y. Scott, president; James A. Wright, vice-president and general manager; E. C. Adams, vice-president and assistant general manager; M. J. Rainey, general sales manager, and L. H. Stanton, treasurer.

Mr. Wright began his business

the coal strike after the two-week truce period, will definitely affect production. While Cincinnati's power situation is reported to be in better condition than in most areas because of fuel inventories, the reduction in rail facilities has begun to pinch shipments to some degree. Builders indicate that business, both on the books and potentially, is good, but the continued addition of new problems keeps some parts of the business in a nightmarish condition. Strikes at Cincinnati plants continue, with settlement, according to close observers, apparently nowhere near.

Much speculation surrounds the steel situation in machine tool users' plants. In all probability most of the plants which will close down as a direct result of the steel shortage resulting from the coal strike will do so after the mills are back in operation. Many consumers of bar stock and small rounds will not get the steel which have been delivered to them now, until late July, August, or early September.

career in 1915 as superintendent of the Russell Motor Car Co., Toronto. After World War I, he was successively assistant factory manager of John Russell Cutlery Co., then president and treasurer of the New York, Mica Mfg. Co., and then director of sales of Indian Motorcycle Co. He went to the Van Norman Co. in 1934, as assistant to the president.

## Elects Chapter Officers

Chicago

• • • Chapter officers for the coming year have been elected by the Machinery Dealers National Assn.

They are: Chicago, Vic Segal, chairman, Charles Kempler, vice-chairman, Harold Goldstein, secretary; Detroit, Robert Brown, chairman, R. A. Vine, vice-chairman, John Green, secretary; New England, Charles Smith, chairman, William De Senti, secretary; New York, Sam Wiener, chairman, H. Worheim, vice-chairman, Richard Nathans, secretary; Philadelphia, J. E. Middleton, chairman, and Frank J. Lunney, secretary.



# Capacity...

WITH this battery of twelve No. 6A and No. 9A MARVEL High Speed Automatic Hack Saws, the Hammond & Irving Forge Co. of Auburn, New York, can cut off billets automatically, not only in tremendous numbers, but in accurate weights and sizes to exactly fill each die without waste. With 12 of the "world's fastest cutting-off saws", they were able to keep all hammers running on their tremendous war orders, and were able to instantly resume peacetime manufacturing without re-tooling or other delay. The No. 6A and No. 9A MARVEL automatics have capacities of 6" x 6" and 10" x 10" respectively. In addition to the battery of MARVEL Automatics, Hammond & Irving have cutting-off capacity of a different sort in their MARVEL No. 18 Hydraulic Hack Saw—capacity for size—because this roll-stroke giant cuts off billets and bars in sizes to 18" x 18" cross section. It easily handles the toughest and hardest steels.

## ARMSTRONG-BLUM MFG. CO.

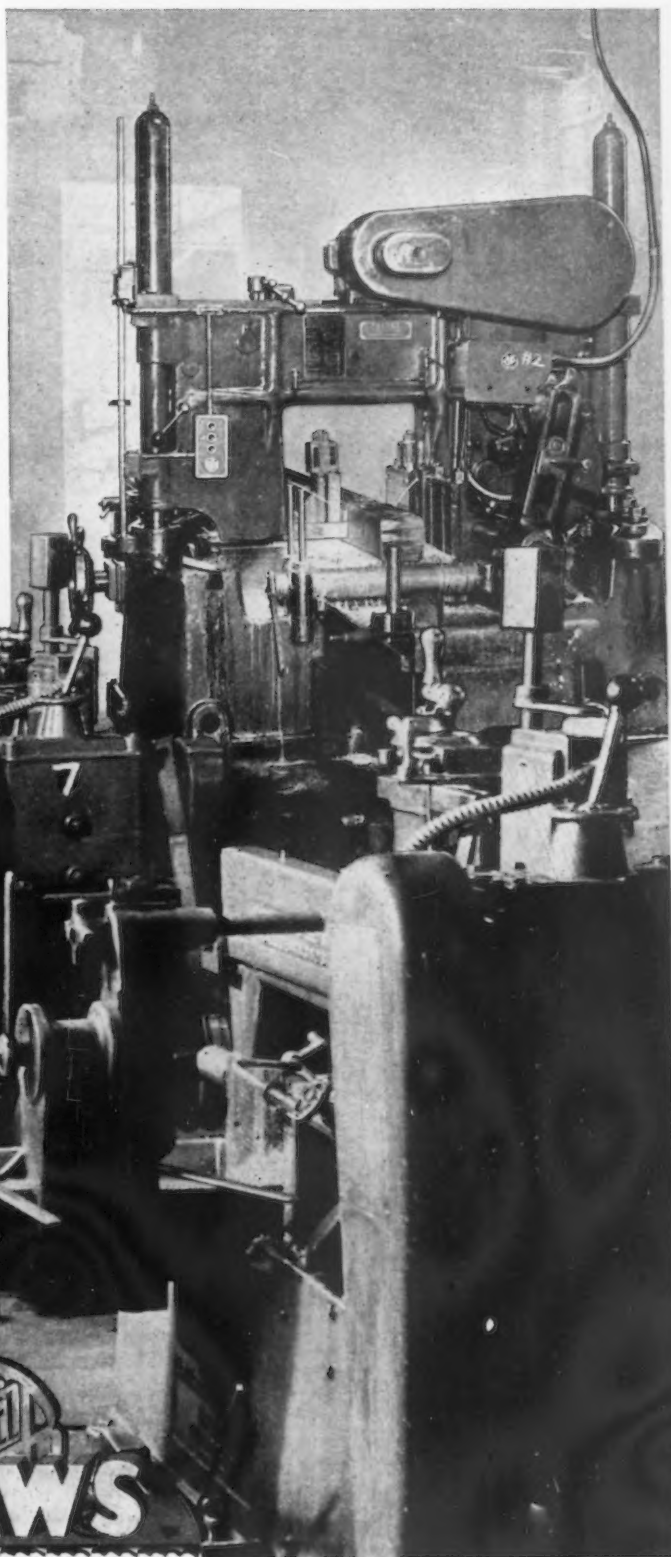
"The Hack Saw People"

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**MARVEL 18**  
*for Size,*  
**MARVEL 6A and 9A**  
*for Volume Production*



# MARVEL SAWS

# NONFERROUS METALS

... News and Market Activities

## Copper, Brass Scrap, Ingot to Share Rise

New York

• • • There has been no decision reached by the early part of the week on a copper price increase, it has been learned. Application for such increase has been made only by two low cost mining companies, although these are the largest domestic producers. The Anaconda agreement has not yet been approved by the Wage Stabilization Board so OPA is reported to consider itself unable to act yet.

Brass and bronze ingot is expected to receive a price increase somewhat greater than that granted to copper mine producers. There will also be a pass-through on copper and brass scrap prices, according to an authoritative source.

Meanwhile reports of foreign purchases of copper well above domestic ceilings continue to arrive.

## Ruined Aircraft Scrap Offered at Aberdeen

Aberdeen, Md.

• • • A large quantity of burned and wrecked aircraft aluminum is being offered for negotiated sale by Aberdeen Proving Grounds.

Arrangements may be made to install machinery with which to process this material in the same area where it is now stored. It is thought that movable shears, hydraulic press or smelter might be used to process the material for more economical handling.

## Fabricated Aluminum Up

New York

• • • When fabricated aluminum prices were increased by Alcoa on April 10, the company had already taken the trouble to submit pertinent statistics to OPA for approval, although these products had already been decontrolled. The OPA is reported to have given the figures the same careful review it would have if the products were still under control and, in consideration of the

wage increase of 19¢ per hr, approved the price rise. In this way the company freed itself from any possibility of a roll-back of prices under renewed control.

## To Supply Aluminum Sheets from Surplus

Washington

• • • CPA has worked out an arrangement with WAA to supply manufacturers' aluminum sheet requirements from the government surplus of this tonnage. This action was taken to meet demand for aluminum sheets for the veterans housing program. Aluminum sheets are being used as a substitute for steel sheets.

Manufacturers who need aluminum sheets or semifabricated products are asked to make their needs known to the CPA's Aluminum-Magnesium Branch, which will forward the requests to WAA for immediate consideration.

While aluminum sheet rolling capacity approximates 130 million lb monthly, CPA reported that two government-owned plants leased to private operators, with monthly capacities of 24 million lb each, have not resumed operations to date.

Considerable supplies of aluminum sheets intended for the manufacture of airplanes were turned over to the WAA upon the termination of the war.

## Smelters Forced to Close

Chicago

• • • Power usage restrictions have brought smelter operations in this area to a standstill with the exception of two firms which generate their own power. Apex Smelting Co. and U. S. Reduction Co. both are able to continue operations because of their own power plant. Smelters which have been forced to close include Federated Metals Div. of American Smelting & Refining Co., L. A. Cohn & Bros., Inc., R. Lavin & Sons, Inc., William F. Jobbins, Inc., Benjamin Harris & Co., and H. Kramer & Co.

## CPA Starts Review Of Tinplate Export Orders

Washington

• • • CPA officials, in cooperation with the Office of International Trade, have begun an immediate review of certified export orders for tinplate to determine whether foreign shipments are at a level commensurate with the decline in tin mill production. Agency officials said, however, that currently scheduled export orders are not likely to be disturbed.

The study was started following a meeting on May 7 between agency officials and representatives of the Tinplate Industry Advisory Committee at which the latter recommended tightening of the export program.

Industry members pointed out that export orders carrying the CXS symbol have guarantees of delivery while domestic orders do not.

Committee members also recommended exemption of tinplate production materials from the freight embargo recently issued by ODT. Acids are in shortest supply and members said they must receive exemption if tinplate production is to continue even to the end of May.

A survey by the federal agency has indicated that based on present supplies, tinplate rollings will generally halt in about two weeks and that tinplate finishing operations will come to a standstill by the middle of June.

## Aluminum Roll Tests

New York

• • • Tests of aluminum cloth printing rolls are being made in the Swansea Mills, Swansea, Mass., representatives of the Aluminum Co. of America declared recently. They stated also that experiments also were being made with aluminum rolls for printing, but that those tests were not as far advanced as those for printing textiles. Aluminum rolls are much lighter than copper rolls for cloth printing, which weigh approximately 40 lb.



## NONFERROUS PRICES

### Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, del'd (Min. 10,000 lb)	15.00
Aluminum pig	14.00
Antimony, American, Laredo, Tex.	14.50
Beryllium copper, 3.75-4.25% Be; dollars per lb. contained Be	\$14.75
Beryllium aluminum, 5% Be; dollars per lb. contained Be	\$30.00
Cadmium, del'd	90.00
Cobalt, 97-99% (per lb)	\$1.50 to \$1.57
Copper, electro, Conn. valley	12.00
Copper, electro, New York	11.75
Copper, lake	12.00
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.99% dollars per troy oz.	\$225
Iridium, dollars per troy oz.	\$110.00
Lead, St. Louis	6.35
Lead, New York	6.50
Magnesium, 99.9+%, carlots	20.50
Magnesium, 12-in. sticks, carlots	27.50
Mercury, dollars per 76-lb flask, f.o.b. New York	\$103 to \$105
Nickel, electro	35.00
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$56.00
Silver, New York, cents per oz.	70.75
Tin, Straits, New York	52.00
Zinc, East St. Louis	8.25
Zinc, New York	8.55
Zirconium copper, 6 pct Zr, per lb contained Zr	6.00

### Remelted Metals

(Cents per lb)

Aluminum, No. 12 Fdy. (No. 2)	11.00
Aluminum, deoxidizing	
No. 2, 3, 4	9.50 to 11.25
85-5-5 (No. 115)	13.25
88-10-2 (No. 115)	16.75
90-10-10 (No. 305)	16.00
No. 1 Yellow (No. 405)	10.25

### Copper, Copper Base Alloys

(Mill base, cents per lb)

	Extruded	Rods	Sheets
Copper	22.10		22.08
Copper, H.R.		18.60	
Copper drawn		19.60	
Low brass, 80%	21.43	20.81	
High brass		21.48	
Red brass, 85%	21.64	21.69	
Naval brass	21.40	20.15	25.83
Brass, free cut		16.04	
Commercial bronze, 90%		22.35	22.40
Commercial bronze, 95%		22.56	22.61
Manganese bronze	25.10		29.33
Phos. bronze, A, B, 5%		39.02	38.77
Muntz metal	21.15	19.90	24.08
Everdur, Herculey, Olympic or equal		26.53	27.33
Nickel silver, 5%		30.80	28.62
Architect bronze	20.15		

### Aluminum

(Cents per lb, base, subject to extras for quantity, gage, size, temper and finish)

Tubing: 2 in. OD by 0.065 in. wall: 2S-1/2 H, 40¢; 52S-O, 61¢; 24S-T, 67.5¢; base, 2000 to 4999 lb.

Plate: 1/4 in. and heavier: 2S, 3S, 21.2¢; 52S, 24.2¢; 61S, 22.8¢; 24S, 24S-AL, 24.2¢; 75S, 75S-AL, 29.5¢; base, 30,000 lb and over.

Flat Sheet: 0.136 in. thickness: 2S, 3S, 22.7¢; 52S, 26.2¢; 61S, 24.7¢; 24S-O, 24S-OAL, 26.7¢; 75S-O, 75S-OAL, 31.7¢; base, 30,000 lb and over.

Extruded Shapes: factor determined by dividing the perimeter of the shape by its weight per foot. For factor 1 through 4, 2S, 3S, 25.5¢; 17S, 31¢; 24S, 34¢; 53S, 28¢; 61S, 28.5¢; 63S, 26.5¢; 75S, 39¢; base 2000 to 5000 lb.

Wire, Rod and Bar—screw machine stock, rounds, 11S-T3, 17S-T, 1/4 in., 23.5¢; 1/2 in., 26¢; 1 in., 24.5¢; 2 in., 23¢; hexagons, 1/4 in., 34.5¢; 1/2 in., 28.5¢; 1 in., 25.5¢; base 5000 lb. Rod: 2S, 3S, 1 1/4 to 2 1/4 in. diam., rolled, 23.5¢; cold-finished, 24¢; base 30,000 lb. Round

Wire: drawn, coiled, B & S gage 17-18: 2S, 3S, 33.5¢; 56S, 37.5¢; B & S gage 23: 2S, 3S, 41.5¢; 56S, 44.5¢; 10,000 lb base; B & S gage 00-1: 2S, 3S, 21¢; 56S, 29¢; B & S 15-16: 2S, 3S, 32.5¢; 56S, 36.5¢; base 30,000 lb.

## NONFERROUS SCRAP METAL QUOTATIONS

(OPA basic maximum prices, cents per lb., f.o.b. point of shipment, subject to quality, quantity and special preparation premiums—other prices are current quotations)

### Copper, Copper Base Alloys

#### OPA Group 1†

No. 1 wire, No. 1 heavy copper	9.75
No. 1 tinned copper wire, No. 1 tinned heavy copper	9.75
No. 2 wire, mixed heavy copper	8.75
Copper tuyeres	8.75
Light copper	7.75
Copper borings	9.75
No. 3 copper borings	8.75
Lead covered copper wire, cable	6.00*
Lead covered telephone, power cable	8.04
Insulated copper	3.00*

#### OPA Group 2†

Bell metal	15.50
High grade bronze gears	13.25
High grade bronze solids	11.50*
Low lead bronze borings	11.50*
Babbitt lined brass bushings	13.00
High lead bronze solids	10.00*
High lead bronze borings	10.00*
Red trolley wheels	10.75
Tinny (phosphor bronze) borings	10.50
Tinny (phosphor bronze) solids	10.50
Copper-nickel solids and borings	9.25
Bronze paper mill wire cloth	9.50
Aluminum bronze solids	9.00
Soft red brass (No. 1 composition)	9.00
Soft red brass borings (No. 1)	9.00
Gilding metal turnings	8.50
Contaminated gilded metal solids	3.00
Unlined standard red car boxes	8.25
Lined standard red car boxes	7.75
Cocks and faucets	7.75
Mixed brass screens	7.75
Red brass breakage	7.50
Old nickel silver solids, borings	6.25
Copper lead solids, borings	6.25
Yellow brass castings	6.00
Automobile radiators	7.25
Zincy bronze borings	7.00
Zincy bronze solids	8.00

#### OPA Group 3

Fired rifle shells	8.00
Brass pipe	7.25
Old rolled brass	6.75
Admiralty condenser tubes	7.25
Muntz metal condenser tubes	6.75
Plated brass sheet, pipe reflectors	6.25
Manganese bronze solids	5.50 <sup>1</sup>
Manganese bronze solids	4.50 <sup>1</sup>
Manganese bronze borings	4.00 <sup>1</sup>

#### OPA Group 4

Refinery brass	4.50*
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\*Price varies with analysis. <sup>1</sup>Lead content 0.00 to 0.40 pct. <sup>2</sup>Lead content 0.41 to 1.00 pct.

### Magnesium

Sheet, rod, tubes, bars, extruded shapes subject to individual quotations. Metal turnings: 100 lb. or more, 46c. a lb.; 25 to 90 lb., 56c.; less than 25 lb., 66c.

### Brass Mill Scrap†

Briquetted cartridge brass turnings	8.625
Cartridge brass turnings, loose	7.875
Loose yellow brass trimmings	7.375

### Aluminum\*

#### Plant scrap, segregated

2S solids	8.50 to 9.00
Dural alloys, solids 14, 17, 18, 24S, 25S	5.00 to 5.50
turnings, dry basis	3.50 to 4.00
Low copper alloys 51, 52, 61, 63S solids	7.00 to 8.00
turnings, dry basis	5.00 to 6.50

#### Plant scrap, mixed

Solids	5.25
Turnings, dry basis	4.00

#### Obsolete scrap

Pure cable	8.00
Old sheet and utensils	7.50
Old castings and forgings	6.00
Pistons, free of struts	5.00
Pistons, with struts	4.50
Old alloy sheet	3.00 to 4.00

### Magnesium\*

#### Segregated plant scrap

Pure solids and all other solids, exempt	
Borings and turnings	1.80

#### Mixed, contaminated plant scrap

Grade 1 solids	3.00
Grade 1 borings and turnings	2.00
Grade 2 solids	3.00
Grade 2 borings and turnings	1.00

\*Nominal.

### Zinc

New zinc clippings, trimmings	6.50
Engravers, lithographers plates	6.50
Old zinc scrap	4.75
Unswayed zinc dross	5.00
Die cast slab	4.50
New die cast scrap	4.40
Radiator grilles, old and new	3.50
Old die cast scrap	3.00

### Lead

Deduct 0.55c. a lb. from refined metal basing point prices or soft and hard lead including cable, for f.o.b. point of shipment price.

### Nickel

Ni content 98+%, Cu under 1/4%, 23¢ per lb.; 90 to 98% Ni, 23¢ per lb. contained Ni.

## ELECTROPLATING ANODES AND CHEMICALS

### Anodes

(Cents per lb, f.o.b. shipping point in 500 lb lots)

Copper, frt. allowed	
Cast, oval, 15 in. or longer	25 1/4
Electrodeposited	18 1/4
Rolled, oval, straight	19 1/4
Curved	20 1/4
Brass, 80-20, frt. allowed	
Cast, oval, 15 in. or longer	23 1/4
Zinc, cast, 99.99, 15 in. or longer	16 1/4
Nickel, 99 pct plus, frt. allowed	
Cast	47
Rolled, depolarized	48
Silver, 999 fine	
Rolled, 100 oz. lots, per oz.	80 1/4

### Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 1-5 bbls	34.00
Copper sulphate, 99.5, crystals, bbls	7.75
Nickel salts, single, 425 lb bbls, frt allowed	13.50
Silver Cyanide, 100 oz lots, per oz	0.655
Sodium cyanide, 96 pct, domestic, 100 lb drums	15.00
Zinc cyanide, 100 lb drums	33.00
Zinc sulphate, 89 pct, crystals, bbls, frt allowed	6.35

## Coal Strike Has Not Freed Scrap Supply

### New York

• • • The end of the coal embargo last week brought some relief to the steel industry by permitting the continuation of scrap shipments into mills for immediate use or stockpiling as the case may be, dependent on the conclusion of a final agreement between coal mine operators and the union.

Reports have been received throughout the country of more and more blast furnaces and open-hearths being shut down for lack of coal. Nowhere is there any evidence of an easier scrap position as a result of the closings, nor any evidence of scrap price defection from ceilings.

Power shortages have interfered seriously with industrial scrap generation, and yards and dealers report the movement of scrap to be very slow. Blast furnace scrap has failed to materialize from the re-conversion program to date and has been actively sought after by producers in order to supplement dwindling ore supplies from mining properties still on strike.

**PITTSBURGH**—The suspension of the railroad embargo has eased the fears of a very severe shortage of scrap at steel plants that are still in operation. It was expected that more than the lack of coal would cut into production at those plants still operating at high rates of capacity. Supplies are still holding at about demand levels. Mills will take all they can get, but are actually not in any trouble for the lack of scrap. Overgrading has apparently got to the point that OPA has been doing some investigating in this area and has rejected a considerable tonnage of scrap.

**CHICAGO**—Scrap shipments to consumers scarcely missed a beat as a result of the short-lived freight embargo. Last week's restrictions on electrical power construction in northern Indiana and Illinois, however, brought generation and shipment of scrap from industries in those areas to a standstill during the latter part of the week. With steel mills digging deep into scrap inventories to maintain operations during the coal strike, prospects to replace this material with remote scrap appear dim. Scrap supplies at remote points are reported on better than locally, with the exception of West Coast material which may move on the new reduced freight rate if the situation becomes serious enough. As during the

Cast scrap is in acute short supply and foundries are willing to pay as much as \$10 freight for material. However, this figure does not indicate that there is any appreciable amount of cross-hauling since, in general, cast goes to local consumers.

Again there are reports of the reciprocity arrangement for returning production scrap in return for steel deliveries.

It is reported that yards are putting forth little effort to collect and prepare scrap in view of the high prices of labor and other increasing costs. Some dealers consider that under the present ceiling price structure there is small chance of obtaining a profit. This throws attention once more toward the efforts in some quarters to obtain higher ceilings for scrap. The OPA Industry Advisory Committee is reported to have fought this proposal on the basis that the profit factor was based on the unprepared scrap purchase price. Many of those in the industry are in disagreement with this hypothesis.

wartime scrap crisis, steel producers are receiving offers of scrap in exchange for delivery of new steel.

**PHILADELPHIA**—Mills continue hungry for scrap and, with the railroad embargo now off for the time being, it becomes apparent that there is not very much scrap tonnage moving. A mill that had closed down for a week has now opened production in three openhearth. Other mills are gradually reducing the number of furnaces in operation. Cast scrap continues very scarce with freight costs no object. Prices of all grades continue at ceilings.

**DETROIT**—There has been no significant change in the local market this week. The near-embargo on freight movements has had little effect, if any. Prices continue firmly at ceiling, with demands for all grades exceeding supply by a wide margin. There has been a slight improvement in industrial scrap generated, although volume has been limited by curtailed automobile output.

**BOSTON**—Prior to May 10, yards and brokers managed to dig up a little scrap. Since then rail shipments have been light due to embargoes. The New Haven will accept shipments to electrified connec-

tions, which helps a little, but the Boston & Maine and Boston & Albany are still embargoed. Opinion among railroad executives is that the transportation situation will remain tight for a week, at least. However, foundries are still able to get an occasional trucklot of cast and low phos.

**NEW YORK**—With the railroad embargo lifted and coal once more being mined (temporarily at least), the scrap trade is enjoying a breathing spell. Very little was lost as a result of the curtailment in freight shipments, because it occurred at the end of the week, and also because some of the larger dealers have been able to confine their activities to water transportation. No change in the critical position of all grades of scrap supplies is reported. Prices continue firm at ceiling.

**BUFFALO**—Scrap movement was not affected to any great extent by the rail embargo here in the immediate rail district. Supplies in the switching district are usually handled by diesel engines. The market continues tight as producers increase coal charges because of pig iron shortages. One consumer obtained 2500 tons of No. 2 and bundles by Barge Canal from New York. Leading consumers are maintaining stockpiles.

**CLEVELAND**—No change is evidenced in the scrap market here. All grades continue in exceedingly tight supply with prices at ceiling. Report of dealers paying higher prices for unprepared scrap are more numerous. Major consumers are taking electric furnace for open-hearths. Limited inventory situation is steadily dwindling.

**ST. LOUIS**—The freight embargo temporarily halted the shipment of scrap iron to the St. Louis industrial district last week, and considerable improvement is expected by the end of this week. However, the movement is still delayed by a shortage of labor to gather and process the material. The coal situation did not affect steel operations, one mill taking off two furnaces only because of needed repairs.

**BIRMINGHAM**—Despite the uncertainties of mill operations, demand for all grades of scrap remains extremely heavy in this market. Stocks at dealers' yards are small and, due to the high price of labor and other increased costs, dealers are making little effort to produce scrap. They maintain that they have little chance of making profits under present ceiling prices.

**TORONTO**—Conditions in the Canadian scrap markets were unchanged for the week. Fair quantities of second grade scrap are reaching dealers but very little No. 1 grade, and there has been no easing in the supply situation. The coal strike in the U. S. now is affecting pig iron production in this country and is bringing further pressure on scrap. Demand for scrap is far in excess of supply.



# IRON AND STEEL SCRAP PRICES

## PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$20.00*
RR. hvy. melting	21.00*
No. 2 hvy. melting	20.00*
RR. scrap rails	21.50*
Rails 3 ft. and under	23.50*
No. 1 comp'd sheets	20.00*
Hand bldd. new shts.	20.00*
Hvy. axle turn.	19.50*
Hvy. steel forge turn.	19.50*
Mach. shop turn.	15.00*
Short shov. turn.	17.00*
Mixed bor. and turn.	15.00*
Cast iron borings	16.00*
Hvy. break cast.	16.50*
No. 1 cupola	20.00*
RR. knuck. and coup.	24.50*
RR. coil springs	24.50*
Rail leaf springs	24.50*
Rolled steel wheels	24.50*
Low phos. bil. crops	25.00*
Low phos.	22.50*
RR. malleable	22.00*

## CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 1 bundles	18.75*
No. 2 dealers' bndls.	18.75*
Bundled mach. shop turn.	18.75*
Galv. bundles	16.75*
Mach. shop turn.	13.75*
Short shovels, turn.	15.75*
Cast iron borings	14.75*
Mix. borings & turn.	13.75*
Low phos. hvy. forge.	23.75*
Low phos. plates	21.25*
No. 1 RR. hvy. melt.	19.75*
Reroll rails	22.25*
Miscellaneous rails	20.25*
Angles & splice bars	22.25*
Locomotive tires, cut	24.25*
Cut bolsters & side frames	22.25*
Standard stl. car axles	25.75*
No. 3 steel wheels	23.25*
Couplers & knuckles	23.25*
Agricul. malleable	22.00*
RR. malleable	22.00*
No. 1 mach. cast.	20.00*
Rails 3 ft. and under	22.25*
No. 1 agricul. cast.	20.00*
Hvy. breakable cast.	16.50*
RR. grate bars	15.25*
Cast iron brake shoes	15.25*
Stove plate	19.00*
Clean auto cast.	20.00*
Cast iron carwheels	20.00*

## CINCINNATI

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
No. 1 bundles	19.50*
No. 2 bundles	19.50*
Mach. shop turn.	\$10.50 to 11.00
Shoveling turn.	12.50 to 13.00
Cast iron borings	11.50 to 12.00
Mixed bor. & turn.	11.50 to 12.00
Low phos. plate	22.00*
No. 1 cupola cast.	20.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Scrap rails	21.00*

## BOSTON

Dealers' buying prices per gross ton, f.o.b. cars

No. 1 hvy. melting	\$15.05*
No. 2 hvy. melting	15.05*
No. 1 and 2 bundles	15.05*
Bushelling	15.05*
Turnings, shovellings	12.05*
Machine shop turn.	10.05*
Mixed bor. & turn.	10.05*
Cl'n cast, chem. bor.	\$13.06 to 14.15*

Truck delivery to foundry

Machinery cast.	21.00 to 23.51*
Breakable cast	21.57 to 21.87*
Stove plate	20.00 to 23.51*

## DETROIT

Per gross ton, brokers' buying prices:

No. 1 hvy. melting	\$17.32*
No. 2 hvy. melting	17.32*
No. 1 bundles	17.32*
New bushelling	17.32*
Flashings	17.32*
Mach. shop turn.	12.32*
Short shov. turn.	14.32*

Going prices as obtained in the trade by IRON AGE editors, based on representative tonnages. Where asterisks are used on quotations below, this indicates a ceiling price to which must be added brokerage fee and adjusted freight.

Cast iron borings	13.32*
Mixed bor. & turn.	12.32*
Low phos. plate	19.82*
No. 1 cupola cast.	20.00*
Charging box cast.	19.00*
Hvy. breakable cast.	16.50*
Stove plate	19.00*
Automotive cast	20.00*

## PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$18.75*
No. 2 hvy. melting	18.75*
No. 2 bundles	18.75*
Mach. shop turn.	13.75*
Shoveling turn.	15.75*
Cast iron borings	14.75*
Mixed bor. & turn.	13.75*
No. 1 cupola cast	20.00*
Hvy. breakable cast	16.50*
Cast, charging box	19.00*
Hvy. axle forge turn.	18.25*
Low phos. plate	21.25*
Low phos. punchings	21.25*
Billet crops	21.25*
RR. steel wheels	23.25*
RR. coil springs	23.25*
RR. malleable	22.00*

## ST. LOUIS

Per gross ton delivered to consumer:

Heavy melting	\$17.50*
Bundled sheets	17.50*
Mach. shop turn.	12.50*
Locomotive tires, uncut.	\$18.50 to 19.00
Misc. std. sec. rails	19.00*
Rerolling rails	21.00*
Steel angle bars	21.00*
Rails 3 ft. and under	21.50*
RR. springs	22.00*
Steel car axles	24.50*
Stove plate	19.00*
Grate bars	15.25*
Brake shoes	15.25*
RR. malleable	22.00*
Cast iron carwheels	20.00*
No. 1 mach'ry cast	20.00*
Breakable cast	16.50*

## BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$17.00*
No. 2 hvy. melting	17.00*
No. 2 bundles	17.00*
No. 1 bushelling	17.00*
Long turnings	12.00*
Shoveling turnings	14.00*
Cast iron borings	13.00*
Bar crops and plate	\$18.50 to 19.50*
Structural and plate	18.50 to 19.50*
No. 1 cast	20.00*
Stove plate	19.00*
Steel axles	18.50*
Scrap rails	18.50*
Rerolling rails	20.50*
Angles & splice bars	20.50 to 21.00*
Rails 3 ft. & under	21.00*
Cast iron carwheels	17.50 to 18.00

## YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$20.00*
No. 2 hvy. melting	20.00*
Low phos. plate	22.50*
No. 1 bushelling	20.00*
Hydraulic bundles	20.00*
Mach. shop turn.	15.00*
Short shovel. turn.	17.00*
Cast iron borings	16.00*

## NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$15.33*
No. 2 hvy. melting	15.33*
Comp. black bundles	15.33*
Comp. galv. bundles	13.33*
Mach. shop turn.	10.33*
Mixed bor. & turn.	10.33*
Shoveling turn.	12.33*
No. 1 cupola cast	20.00*

Hvy. breakable cast	16.50*
Charging box cast	19.00*
Store plate	19.00*
Clean auto cast	20.00*
Unstrip. motor blks.	17.50*
Cl'n chem. cast bor.	14.33*

## BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.25*
No. 1 bundles	19.25*
No. 2 bundles	19.25*
No. 2 hvy. melting	19.25*
Mach. shop turn.	14.25*
Shoveling turn.	16.25*
Cast iron borings	14.25*
Cast iron borings	15.25*
Mixed bor. & turn.	14.25*
Stove plate	19.00*
Low phos. plate	21.75*
Scrap rails	20.75*
Rails 3 ft. & under	22.75*
RR. steel wheels	23.75*
Cast iron car wheels	20.00*
RR. coil & leaf spgs.	23.75*
RR. knuckles & coup.	23.75*
RR. malleable	22.00*
No. 1 bushelling	19.25*

## CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$19.50*
No. 2 hvy. melting	19.50*
Compressed sheet stl.	19.50*
Drop forge flashings	19.00
No. 2 bundles	19.50*
Mach. shop turn.	14.50*
Short shovel.	16.50*
No. 1 bushelling	19.50*
Steel axle turn.	19.00*
Low phos. billet and bloom crops	24.50*
Cast iron borings	16.50*
Mixed bor. & turn.	14.50*
No. 2 bushelling	17.00*
No. 1 machine cast	20.00*
Railroad cast	20.00*
Railroad grate bars	15.25*
Stove plate	19.00*
RR. hvy. melting	20.50*
Rails 3 ft. & under	23.00*
Rails 18 in. & under	24.25*
Rails for rerolling	23.00*
Railroad malleable	22.00*
Elec. furnace punch	22.00*

## SAN FRANCISCO

Per gross ton delivered to consumer:

RR. hvy. melting	\$16.00 to \$16.75
No. 1 hvy. melting	16.00 to 16.75
No. 2 hvy. melting	16.00 to 16.75
No. 2 bales	14.00 to 14.75
No. 3 bales	8.50 to 9.25
Mach. shop turn.	6.50 to 7.25
Elec. furn. 1 ft. und.	15.50 to 17.00
No. 1 cupola cast.	19.00 to 21.00

## LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	\$14.50 to \$15.25
No. 2 hvy. melting	13.50 to 14.25
No. 1 bales	13.50 to 14.25
No. 2 bales	12.50 to 13.25
No. 3 bales	8.00 to 9.00
Mach. shop turn.	6.00
No. 1 cupola cast.	19.00 to 21.00

## SEATTLE

Per gross ton delivered to consumer:

RR. hvy. melting	\$14.50*
No. 1 & No. 2 hvy. melting	14.50*
Elec. furn. 1 ft. und.	\$14.00 to 16.00
No. 1 cupola cast.	20.00*

## HAMILTON, ONT.

Per gross ton delivered to consumer:

Heavy melting	\$17.50*
No. 1 bundles	17.50*
No. 2 bundles	17.00*
Mixed steel scrap	15.50*
Rails, remodeling	18.50*
Rails, rerolling	21.50*
Bushellings	13.00*
Mixed borings & turnings	12.50*
Electric furnace bundles	20.50*
Manganese steel scrap	20.00*
No. 1 cast	19.00*
Stove plate	17.50*
Car wheels, cast	19.50*
Malleable iron	16.00*

# Comparison of Prices . .

Advances over past week in Heavy Type; declines in *Italics*. Prices are f.o.b. major basing points. The various basing points for finished and semifinished steel are listed in the detailed price tables.

Flat-Rolled Steel (cents per pound)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Hot-rolled sheets .....	2.425	2.425	2.425	2.20
Cold-rolled sheets .....	3.275	3.275	3.275	3.05
Galvanized sheets (24 ga.)	4.05	4.05	4.05	3.65
Hot-rolled strip 6 in. and under.....	2.45	2.45	2.45	2.10
Over 6 in. ....	2.35	2.35	2.35	2.10
Cold-rolled strip .....	3.05	3.05	3.05	2.80
Plates .....	2.50	2.50	2.50	2.20
Plates, wrought iron ....	4.112	4.112	4.112	3.80
Stain's c-r strip (No. 302)	28.00	28.00	28.00	28.00

Tin and Terneplate: (dollars per base box)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Tinplate, standard cokes.	\$5.25	\$5.25	\$5.25	\$5.00
Tinplate, electro (0.50 lb)	4.75	4.75	4.75	4.50
Special coated mfg. ternes	4.55	4.55	4.55	4.30

Bars and Shapes: (cents per pound)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Merchant bars .....	2.50	2.50	2.50	2.15
Cold-finished bars .....	3.10	3.10	3.10	2.65
Alloy bars .....	2.808	2.808	2.808	2.70
Structural shapes .....	2.35	2.35	2.35	2.10
Stainless bars (No. 302).	24.00	24.00	24.00	24.00
Wrought iron bars .....	4.76	4.76	4.76	4.40

Wire and Wire Products: (cents per pound)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Bright wire .....	3.05	3.05	3.05	2.60
Wire nails .....	3.25	3.25	3.25	2.80

Rails: (dollars per net ton)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Heavy rails .....	\$43.39	\$43.39	\$43.39	\$43.00
Light rails .....	49.18	49.18	49.18	43.00

Semifinished Steel: (dollars per gross ton)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Rerolling billets .....	\$39.00	\$39.00	\$39.00	\$34.00
Sheet bars .....	38.00	38.00	38.00	34.00
Slabs, rerolling .....	39.00	39.00	39.00	34.00
Forging billets .....	47.00	47.00	47.00	40.00
Alloy blooms, billets, slabs	56.16	56.16	56.16	54.00

Wire Rods and Skelp: (cents per pound)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Wire rods .....	2.30	2.30	2.30	2.00
Skelp .....	2.05	2.05	2.05	1.90

Pig Iron: (per gross ton)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
No. 2 foundry, Phila.....	\$28.34	\$28.34	\$28.34	\$26.84
No. 2, Valley furnace....	26.50	26.50	26.50	25.00
No. 2, Southern, Cin'ti...	26.94	26.94	26.94	25.44
No. 2, Birmingham.....	22.88	22.88	22.88	21.38
No. 2 foundry, Chicago†.	26.50	26.50	26.50	25.00
Basic, del'd eastern Pa...	27.84	27.84	27.84	26.34
Basic, Valley furnace....	26.00	26.00	26.00	24.50
Malleable, Chicago† ....	26.50	26.50	26.50	25.00
Malleable, Valley .....	26.50	26.50	26.50	25.00
L. S. charcoal, Chicago..	42.34	42.34	42.34	42.34
Ferromanganese† .....	135.00	135.00	135.00	135.00

† The switching charge for delivery to foundries in the Chicago district is 60¢ per ton.  
‡ For carlots at seaboard.

Scrap: (per gross ton)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Heavy melt'g steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.50
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.32	17.32	17.32	17.32
Low phos. plate, Youngs'n	22.50	22.50	22.50	22.50
No. 1 cast, Pittsburgh...	20.00	20.00	20.00	20.00
No. 1 cast, Philadelphia	20.00	20.00	20.00	20.00
No. 1 cast, Chicago.....	20.00	20.00	20.00	20.00

Coke, Connellsville: (per net ton at oven)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Furnace coke, prompt...	\$7.50	\$7.50	\$7.50	\$7.00
Foundry coke, prompt...	9.00	9.00	9.00	8.25

Nonferrous Metals: (cents per pound to large buyers)	May 14, 1946	May 7, 1946	Apr. 9, 1946	May 15, 1945
Copper, electro., Conn....	12.00	12.00	12.00	12.00
Copper, Lake .....	12.00	12.00	12.00	12.00
Tin, Straits, New York..	52.00	52.00	52.00	52.00
Zinc, East St. Louis.....	8.25	8.25	8.25	8.25
Lead, St. Louis .....	6.35	6.35	6.35	6.35
Aluminum, virgin, del'd..	15.00	15.00	15.00	15.00
Nickel, electrolytic .....	35.00	35.00	35.00	35.00
Magnesium, ingot .....	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex...	14.50	14.50	14.50	14.50

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942 and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite prices for the current quarter are an estimate based on finished steel shipments for the previous quarter. These figures will be revised when the actual data of shipments for this quarter are compiled.

# Composite Prices . .

FINISHED STEEL			
May 14, 1946.....	2.69516¢	per lb.....	
One week ago .....	2.69516¢	per lb.....	
One month ago .....	2.69516¢	per lb.....	
One year ago.....	2.42471¢	per lb.....	

HIGH		LOW	
1946.....	2.69516¢ Feb. 19	2.44104¢ Jan. 1	
1945.....	2.44104¢ Oct. ?	2.38444¢ Jan. 2	
1944.....	2.30837¢ Sept. 5	2.21189¢ Oct. 5	
1943.....	2.29176¢	2.29176¢	
1942.....	2.28249¢	2.28249¢	
1941.....	2.43078¢	2.43078¢	
1940.....	2.30467¢ Jan. 2	2.24107¢ Apr. 16	
1939.....	2.35367¢ Jan. 3	2.26689¢ May 16	
1938.....	2.58414¢ Jan. 4	2.27207¢ Oct. 18	
1937.....	2.58414¢ Mar. 9	2.32263¢ Jan. 4	
1936.....	2.32263¢ Dec. 28	2.05200¢ Mar. 10	
1935.....	2.07642¢ Oct. 1	2.06492¢ Jan. 8	
1934.....	2.15367¢ Apr. 24	1.95757¢ Jan. 2	
1933.....	1.95578¢ Oct. 3	1.75836¢ May 2	
1932.....	1.89196¢ July 5	1.83901¢ Mar. 1	
1931.....	1.99626¢ Jan. 13	1.86586¢ Dec. 29	
1930.....	2.25488¢ Jan. 7	1.97319¢ Dec. 9	
1929.....	2.31773¢ May 28	2.26498¢ Oct. 29	

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 pct of the United States output. Index recapitulated in Aug. 22, 1941, issue.

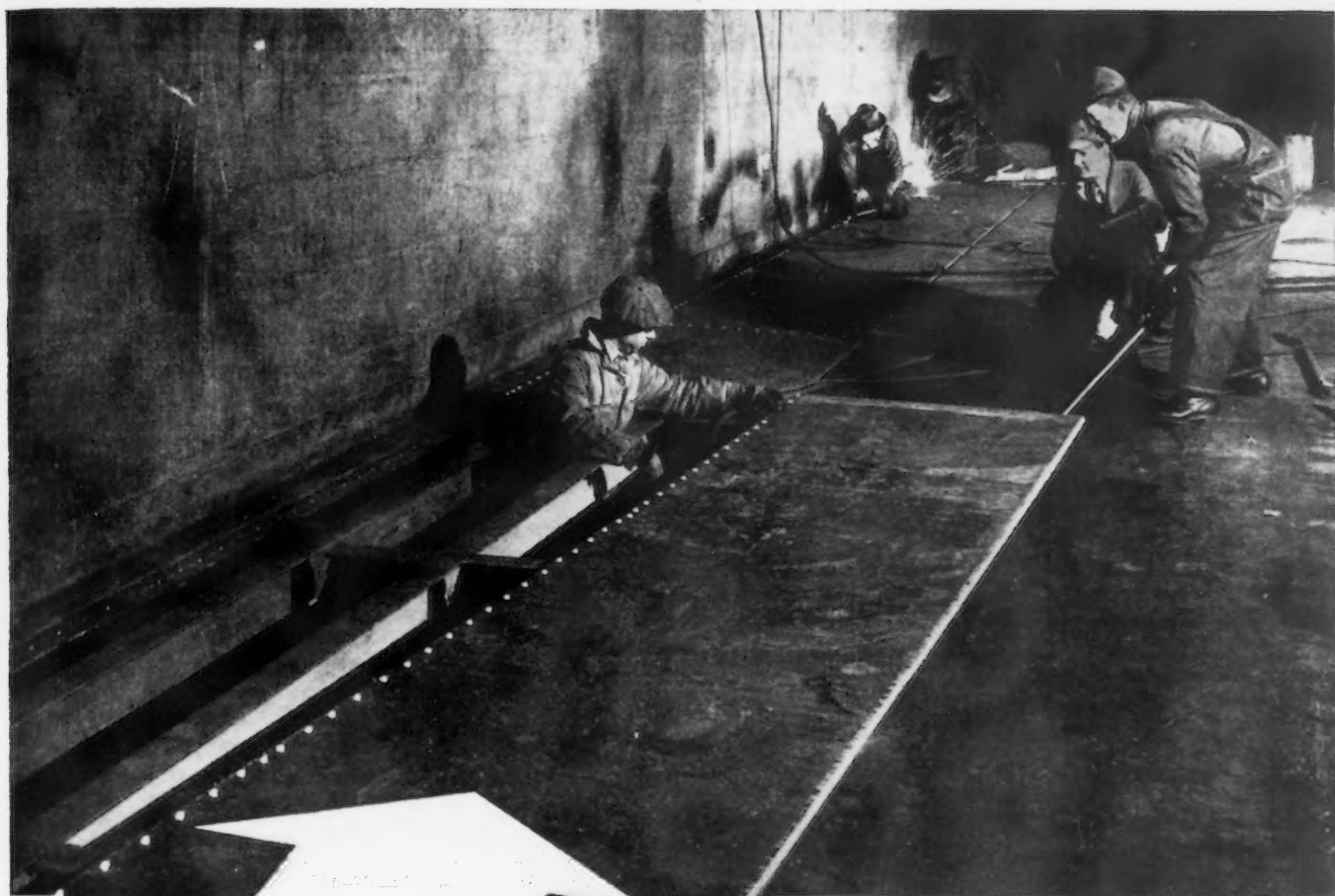
PIG IRON	
.....	\$26.12 per gross ton.....
.....	\$26.12 per gross ton.....
.....	\$26.12 per gross ton.....
.....	\$24.61 per gross ton.....

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

SCRAP STEEL	
.....	\$19.17 per gross ton.....
.....	\$19.17 per gross ton.....
.....	\$19.17 per gross ton.....
.....	\$19.08 per gross ton.....

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.





*Cut Maintenance Costs*  
REPLACE, REPAIR AND BUILD WITH  
**J&L OTISCOLOY STEEL**

**J&L  
STEEL**

The Otiscoloy plates going into the cargo deck of this ore freighter are replacing old tank quality plates which quickly wore out from the abrasive action of ore unloaders and weight of heavy loads. Otiscoloy plates are designed for applications such as this for they have a high yield and tensile strength plus resistance to abrasion and corrosion. Yet Otiscoloy is fabricated and welded as easily as ordinary steel. Write today for Otiscoloy booklet.

**JONES & LAUGHLIN STEEL CORPORATION**  
PITTSBURGH 30, PENNSYLVANIA

THE IRON AGE, May 16, 1946—117

# Iron and Steel Prices...

Steel prices shown here are f.o.b. basing points, in cents per pound or dollars per gross ton. Extras apply. Delivered prices do not reflect 3 pct tax on freight. (1) Mill run sheet, 10¢ per 100 lb under base; primes, 25¢ above base. (2) Unassorted commercial coating. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Applies to certain width and length limitations. (6) For merchant trade. (7) For straight length material only from producer to consumer. Discount of 25¢ per 100 lb to fabricators. (8) Also shafting. For quantities of 20,000 lb to 39,999 lb. (9) Carload lot in manufacturing trade. (10) Prices do not apply if rail and water is not used. (11) Boxed. (12) This base price for annealed, bright finish wires, commercial spring wire. (13) Produced to dimensional tolerances in AISI Manual Sect. 6. (14) Billets only. (15) 9/32 in. to 47/64 in., 0.15¢ per lb higher. (16) Add 8.2 pct to base price and extras.

Basing Points	DELIVERED TO											
	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	10 Pacific Ports, Cars
INGOTS												
Carbon, re-rolling												
Carbon, forging	\$38	\$38	\$38	\$38	\$38	\$38	\$38					
Alloy	\$46.80	\$46.80				\$46.80						
BILLETS, BLOOMS, SLABS												
Carbon, re-rolling	\$39	\$39	\$39	\$39	\$39							
Carbon, forging billets	\$47	\$47	\$47	\$47	\$47							
Alloy	\$56.16	\$56.16				\$56.16						
SHEET BARS	\$38	\$38		\$38		\$38	\$38	\$38				
PIPE SKELP	2.05¢	2.05¢					2.05¢	2.05¢				
WIRE RODS <sup>15</sup>												
No. 5 to 9/32 in.	2.30¢	2.30¢		2.30¢	2.30¢						2.55¢	2.80¢
SHEETS												
Hot-rolled	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.425¢	2.525¢	2.425¢	2.975¢	2.525¢
Cold-rolled <sup>1</sup>	3.275¢	3.275¢	3.275¢	3.275¢		3.275¢	3.275¢		3.375¢	3.275¢	3.925¢	3.375¢
Galvanized (24 gage)	4.05¢	4.05¢	4.05¢		4.05¢	4.05¢	4.05¢	4.05¢	4.15¢	4.05¢	4.60¢	4.29¢
Enameling (20 gage)	3.80¢	3.80¢	3.80¢	3.80¢			3.80¢		3.90¢	3.80¢	4.45¢	3.90¢
Long ternes <sup>2</sup>	4.05¢	4.05¢	4.05¢								4.80¢	4.41¢
STRIP												
Hot-rolled <sup>3</sup> 6 in. and under over 6 in.	2.45¢	2.45¢	2.45¢	2.45¢	2.45¢		2.45¢			2.45¢	3.10¢	2.55¢
	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢		2.35¢			2.35¢	3.00¢	2.45¢
Cold-rolled <sup>4</sup>	3.05¢	3.15¢		3.05¢			3.05¢					3.15¢
Cooperage stock	2.55¢	2.55¢			2.55¢		2.55¢					2.91¢
Commodity cold-rolled	3.20¢	3.30¢		3.20¢			3.20¢					3.30¢
TINPLATE												
Standard cokes, base box	\$5.25	\$5.25	\$5.25		\$5.35			\$5.35	\$5.35			\$5.604 <sup>11</sup>
Electro, box												
0.25 lb	\$4.60	\$4.60	\$4.60					\$4.70				
0.50 lb	\$4.75	\$4.75	\$4.75					\$4.85	\$4.85			
0.75 lb	\$4.90	\$4.90	\$4.90					\$5.00	\$5.00			
BLACKPLATE												
29 gage <sup>5</sup>	3.30¢	3.30¢	3.30¢					3.40¢	3.40¢			3.57¢
TERNES, MFG.												
Special coated, base box	\$4.55	\$4.55	\$4.55					\$4.65	\$4.65			
BARs												
Carbon steel	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢				2.85¢	3.15¢
Rail steel <sup>6</sup>	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢					2.85¢	3.15¢
Reinforcing (billet) <sup>7</sup>	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢			2.70¢	2.75¢
Reinforcing (rail) <sup>7</sup>	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢	2.35¢				2.70¢	2.75¢
Cold-finished <sup>8</sup>	3.10¢	3.10¢	3.10¢	3.10¢		3.10¢						3.44¢
Alloy, hot-rolled	2.808¢	2.808¢				2.808¢	2.808¢					2.908¢
Alloy, cold-drawn	3.484¢	3.484¢	3.484¢	3.484¢		3.484¢						3.584¢
PLATE												
Carbon steel <sup>13</sup>	2.50¢	2.50¢	2.50¢	2.50¢	2.50¢		2.50¢					2.69¢
Floor plates	3.75¢	3.75¢									4.10¢	4.40¢
Alloy	3.64¢	3.64¢									4.108¢	4.316¢
SHAPES												
Structural	2.35¢	2.35¢	2.35¢		2.35¢	2.35¢					2.60¢	3.00¢
SPRING STEEL, C-R												
0.26 to 0.50 carbon	2.80¢			2.80¢								
0.51 to 0.75 carbon	4.30¢			4.30¢								
0.76 to 1.00 carbon	6.15¢			6.15¢								
1.01 to 1.25 carbon	8.35¢			8.35¢								
WIRE <sup>9</sup>												
Bright <sup>12</sup>	3.05¢	3.05¢		3.05¢	3.05¢						3.55¢	3.37¢
Galvanized												
Spring (high carbon)	3.65¢	3.65¢		3.65¢							4.15¢	3.97¢
PILING												
Steel sheet	2.65¢	2.65¢				2.65¢					3.20¢	2.97¢



## CORROSION AND HEAT RESISTANT STEELS

In cents per pound, f.o.b. basing point

## BASING POINT

	Chromium Nickel		Straight Chromium			
	No. 304	No. 302	No. 410	No. 430	No. 442	No. 446
Ingot, P'gh, Chi, Canton, Balt, Reading, Ft. Wayne, Phila.	Subject to negotiation			Subject to negotiation		
Blooms, P'gh, Chi, Canton, Phila, Reading, Ft. Wayne, Balt.	22.99	24.67	17.01	17.47	20.69	25.29
Slabs, P'gh, Chi, Canton, Balt, Phila, Reading	22.99	24.67	17.01	17.47	20.69	25.29
Billets, P'gh, Chi, Canton, Newark, N. J., Watervliet, Syracuse, Balt.	Subject to negotiation			Subject to negotiation		
Billets, forging, P'gh, Chi, Canton, Dunkirk, Balt, Phila, Reading, Watervliet, Syracuse, Newark, N. J., Ft. Wayne, Titusville	22.99	24.67	17.01	17.47	20.69	25.29
Bars, h-r, P'gh, Chi, Canton, Dunkirk, Watervliet, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Titusville	27.05	25.97	20.02	20.56	24.34	29.75
Bars, c-f, P'gh, Chi, Cleve, Canton, Dunkirk, Newark, N. J., Syracuse, Balt, Phila, Reading, Ft. Wayne, Watervliet	27.05	25.97	20.02	20.56	24.34	29.75
Plates, P'gh, Middletown, Canton	31.38	29.21	23.28	23.80	28.67	33.00
Shapes, structural P'gh Chi	27.05	25.97	20.02	20.56	24.34	29.75
Sheets, P'gh, Chi, Middletown, Canton, Balt.	38.95	36.79	28.67	31.38	35.16	38.49
Strip, h-r, P'gh, Chi, Reading, Canton, Youngstown	25.43	23.28	18.39	18.93	25.97	37.87
Strip, c-r, P'gh, Cleve, Newark, N. J., Reading, Canton, Youngstown	32.46	30.30	23.80	24.34	34.62	56.26
Wire, c-d, Cleve, Dunkirk, Syracuse, Balt, Reading, Canton, P'gh, Newark, N. J., Phila.	27.05	25.97	20.02	20.56	24.34	29.75
Wire, flat, c-r, Cleve, Balt, Reading, Dunkirk, Canton	32.46	30.30	23.80	24.34	34.62	56.26
Rod, h-r, Newark, N. J., Syracuse	27.05	25.97	20.02	20.56	24.34	29.75
Tubing, seamless, P'gh, Chi, Canton, (4 in. to 6 in.)	72.09	72.09	.....	68.49	.....	.....

## SHELL STEEL

	per gross ton
3 in. to 12 in.	\$52.00
12 in. to 18 in.	54.00
18 in. and over	56.00

Basic openhearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.

Prices delivered Detroit are \$2.00 higher; East Michigan, \$3 higher.

Price Exceptions: Follansbee Steel Corp. permitted to sell at \$13.00 per gross ton, f.o.b. Toronto, Ohio, above base price of \$52.00.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting, or quantity.

## ELECTRICAL SHEETS

Base, all grades f.o.b. Pittsburgh

	per lb
Field grade	3.90¢
Armature	4.23¢
Electrical	4.75¢
Motor	5.425¢
Dynamo	6.125¢
Transformer 72	6.625¢
Transformer 65	7.625¢
Transformer 58	8.125¢
Transformer 52	8.925¢

F.o.b. Chicago and Gary, field grade through motor; f.o.b. Granite City, add 10¢ per 100 lb on field grade to and including dynamo. Pacific ports add 75¢ per 100 lb on all grades.

## RAILS, TRACK SUPPLIES

(F.o.b. mill)

Standard rails, heavier than 60 lb No. 1 O.H., net ton	\$43.39
Angle splice bars, 100 lb	2.85
(F.o.b. basing points)	
Light rails (from billets)	\$49.18
Light rails (from rail steel)	49.18
(base per lb)	
Cut spikes	3.65¢
Screw spikes	5.55¢
Tie plate, steel	2.55¢
Tie plates, Pacific Coast	2.70¢
Track bolts	4.75¢
Track bolts, heat treated, to railroads	5.00¢
Track bolts, jobbers discount	63-5

Basing points, light rails, Pittsburgh, Chicago, Birmingham; cut spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo. Cut spikes alone—Youngstown, Lebanon, Pa., Richmond, Oregon and Washington ports, add 25¢.

## TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse, Dunkirk. \*Also Canton, O.)

An increase of 8.2 pct applies to base price and extras

	Base per lb
High speed	67¢
Straight molybdenum	54¢
Tungsten-molybdenum	57½¢
High-carbon-chromium*	43¢
Oil hardening*	24¢
Special carbon*	22¢
Extra carbon*	18¢
Regular carbon*	14¢

Warehouse prices on and east of Mississippi are 2¢ per lb higher; west of Mississippi 3¢ higher.

## CLAD STEEL

Base prices, cents per pound

	Plate Sheet
Stainless-clad	
No. 304, 20 pct, f.o.b. Pittsburgh, Washington, Pa.	18.72* 19.76
Nickel-clad	
10 pct, f.o.b. Coatesville, Pa.	18.72
Inconel-clad	
10 pct, f.o.b. Coatesville..	26.00
Monel-clad	
10 pct, f.o.b. Coatesville..	24.96
Aluminized steel	
Hot dip, 20 gage, f.o.b. Pittsburgh	9.90

\*Includes annealing and pickling.

## WIRE PRODUCTS

To the dealer, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham, Duluth

	Basing Points Named	Pacific Coast Basing Points†
Standard wire nails	\$3.25	\$3.75
Coated nails	3.25	3.75
Cut nails, carloads	3.55	.....

	base per keg
Standard wire nails	\$3.25
Coated nails	3.25
Cut nails, carloads	3.55

	base per 100 lb
Annealed fence wire	\$3.50
Annealed galv. fence wire	3.85

	base column
Woven wire fence*	72 90
Fence posts, carloads...	74 91
Single loop bale tie††	72 97
Galvanized barbed wire**	79 89
Twisted barbed wire	79 89

\*15½ gage and heavier. \*\*On 80-rod spools in carload quantities.

†Prices subject to switching or transportation charges.

††Add 50¢ a ton.

## ROOFING TERNEPLATE

(F.o.b. Pittsburgh, 112 sheets)

	20x14 in.	20x28 in.
8-lb. coating I.C.	\$8.50	\$17.00
15-lb. coating I.C.	9.50	19.00
20-lb. coating I.C.	10.00	20.00

## ALLOY EXTRAS

Alloy Steel	Basic Openhearth		Electric Furnace	
	Bars and Bar-strip	Billets, Blooms and Slabs	Bars and Bar-strip	Billets, Blooms and Slabs
NE 8600	0.678¢	\$13.52	1.196¢	\$23.92
NE 8700	0.728	14.56	1.248	24.96
NE 9400	0.780	15.60	1.300	26.00
NE 9700	0.676	13.52	1.196	23.92
NE 9800	1.352	27.04	1.872	37.44
NE 9900	1.248	24.96	1.612	32.24

The extras shown are in addition to the base price of \$2.808 per 100 lb on finished products and \$56.16 per gross ton on semifinished steel, major basing points, as shown in table, opposite page, and are in cents per pound when applicable to bars and bar-strip and in dollars per gross ton when applicable to billets, blooms and slabs. When acid openhearth is specified and acceptable, add to basic openhearth alloy differential 0.26¢ per lb for bars and bar-strip and \$5.20 per gross ton for billets, blooms and slabs.

# PRICES

## WELDED PIPE AND TUBING

Base discounts, f.o.b. Pittsburgh district and Lorain, Ohio, mills  
(F.o.b. Pittsburgh only on wrought pipe)  
base price—\$200.00 per net ton

### Steel (buttweld)

	Black	Galv.
1/2-in. ....	60 1/2	48
3/4-in. ....	63 1/2	52
1-in. to 3-in. ....	65 1/2	54 1/2

### Wrought Iron (buttweld)

1/2-in. ....	18	+4
3/4-in. ....	24	2 1/2
1-in. and 1 1/4-in. ....	28 1/2	9
1 1/2-in. ....	33	12
2-in. ....	32	11

### Steel (lapweld)

2-in. ....	58	46 1/2
2 1/2-in. and 3-in. ....	61	49 1/2
3 1/2-in. to 6-in. ....	63	51 1/2

### Wrought Iron (lapweld)

2-in. ....	25	4 1/2
2 1/2-in. to 3 1/2-in. ....	26	7
4-in. ....	28	11
4 1/2-in. to 8-in. ....	27	10

### Steel (butt, extra strong, plain ends)

1/2-in. ....	58 1/2	47 1/2
3/4-in. ....	62 1/2	51 1/2
1-in. to 3-in. ....	64	54

### Wrought Iron (same as above)

1/2-in. ....	19	+1 1/2
3/4-in. ....	25	4 1/2
1-in. to 2-in. ....	33	13

### Steel (lap, extra strong, plain ends)

2-in. ....	56	45 1/2
2 1/2-in. and 3-in. ....	60	49 1/2
3 1/2-in. to 6-in. ....	63 1/2	53

### Wrought Iron (same as above)

2-in. ....	23	8 1/2
2 1/2-in. to 4-in. ....	34	16
4 1/2-in. to 6-in. ....	32	14 1/2

On buttweld and lapweld steel pipe jobbers are granted a discount of 5 pct. On l.c.l. shipments prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lapweld and one point lower discount, or \$2 a ton higher on all buttweld.

## BOILER TUBES

Seamless steel and lapweld commercial boiler tubes and locomotive tubes, minimum wall. Net base prices per 100 ft f.o.b. Pittsburgh, in carload lots

	Lap- Cold- Drawn	Seamless Hot- Rolled	Hot- Rolled
2 in. O.D. 13 B.W.G. ....	16.52	13.90	13.20
2 1/2 in. O.D. 12 B.W.G. ....	22.21	18.70	17.67
3 in. O.D. 12 B.W.G. ....	24.71	20.79	19.56
3 1/2 in. O.D. 11 B.W.G. ....	31.18	26.25	24.68
4 in. O.D. 10 B.W.G. ....	38.68	32.56	30.55

### (Extras for less carload quantities)

40,000 lb or ft and over.....	Base
20,000 lb or ft to 39,999 lb or ft.....	5 pct
10,000 lb or ft to 19,999 lb or ft.....	10 pct
5,000 lb or ft to 9,999 lb or ft.....	20 pct
2,000 lb or ft or 4,999 lb or ft.....	30 pct
Under 2,000 lb or ft.....	45 pct
	65 pct

## CAST IRON WATER PIPE

Per Net Ton

6-in. and larger, del'd Chicago.....	\$60.30
6-in. and larger, del'd New York.....	60.20
6-in. and larger, Birmingham.....	52.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles or Seattle.....	74.00
For all rail shipment; rail and water shipment less.	
Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$5 a ton above 6-in.	

## BOLTS, NUTS, RIVETS, SET SCREWS

An increase of 7 pct applies to all listings.

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

### Machine and Carriage Bolts

Base discount less case lots

	Percent Off List
1/2 in. & smaller x 6 in. & shorter.....	65 1/2
9/16 & 3/4 in. x 6 in. & shorter.....	63 1/2
3/4 to 1 in. x 6 in. & shorter.....	61
1 1/4 in. and larger, all lengths.....	59
All diameters over 6 in. long.....	59
Lag. all sizes.....	62
Plow bolts.....	65

### Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

1/2 in. and smaller.....	62
9/16 to 1 in. inclusive.....	59
1 1/4 to 1 1/2 in. inclusive.....	57
1 1/2 in. and larger.....	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

### Semifin. Hexagon Nuts

U.S.S. S.A.E.

Base discount less keg lots

7/16 in. and smaller.....	64
1/2 in. and smaller.....	62
1/2 in. through 1 in.....	60
9/16 in. through 1 in.....	59
1 1/4 in. through 1 1/2 in.....	57
1 1/2 in. and larger.....	56

In full keg lots, 10 pct additional discount.

### Stove Bolts

	Consumer
Packages, nuts loose.....	71 and 10
In packages.....	71
In bulk.....	80
On stove bolts freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago, New York on lots of 200 lb or over.	

### Large Rivets

(1/2 in. and larger)

Base per 100 Lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham.....	\$3.75
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### Small Rivets

(7/16 in. and smaller)

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham.....	65 and 5
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### Cap and Set Screws

Percent Off List

Upset full fin, hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.....	64
Upset set screws, cup and oval points.....	71
Milled studs.....	46
Flat head cap screws, listed sizes.....	36
Fillister head cap, listed sizes.....	51
Freight allowed up to 65¢ per 100 lb based on Cleveland, Chicago or New York on lots of 200 lb or over.	

## FLUORSPAR

Maximum price f.o.b. consumer's plant, \$30 per short ton plus either (1) rail freight from producer to consumer, or (2) rail freight from Rosiclare, Ill., to consumer, whichever is lower.

### Exception

When the WPB Steel Div. certifies in writing the consumers need for one of the higher grades of metallurgical fluor spar specified in the table below the price shall be taken from the table plus items (1 and 2) from paragraph above.

	Base price per short ton
Effective CaF <sub>2</sub> Content:	
70% or more.....	\$33.00
65% but less than 70%.....	32.00
60% but less than 65%.....	31.00
Less than 60%.....	30.00

## METAL POWDERS

Prices are based on current market prices of ingots plus a fixed figure. F.o.b. shipping point, cents per lb, ton lots.  
Copper, electrolytic, 150 and 200 mesh.....21 1/2¢ to 23 1/2¢  
Copper, reduced, 150 and 200 mesh.....20 1/2¢ to 25 1/2¢  
Iron, commercial, 100 and 200 mesh 96 + % Fe.....13 1/2¢ to 15¢

Iron, crushed, 200 mesh and finer, 90 + % Fe carload lots.....	4¢
Iron, hydrogen reduced, 300 mesh and finer, 98 1/2 + % Fe, drum lots.....	62¢
Iron, electrolytic, unannealed, 300 mesh and coarser, 99 + % Fe 30 to 32¢	
Iron, electrolytic, annealed minus 100 mesh, 99 + % Fe.....	42¢
Iron carbonyl, 300 mesh and finer, 98-99 1/2 + % Fe.....	90¢
Aluminum, 100 and 200 mesh.....	*25¢
Antimony, 100 mesh.....	30¢
Cadmium, 100 mesh.....	\$1.40
Chromium, 100 mesh and finer.....	\$1.20
Lead, 100, 200 & 300 mesh.....	11 1/2 to 15¢
Manganese.....	65¢
Nickel, 150 mesh.....	51 1/2¢
Solder powder, 100 mesh, 3/4¢ plus metal	
Tin, 100 mesh.....	58 1/2¢
Tungsten metal powder, 98%-99%, any quantity, per lb.....	\$2.60
Molybdenum powder, 99%, in 200-lb kegs, f.o.b. York, Pa., per lb.....	\$2.60
Under 100 lb.....	\$3.00

\*Freight allowed east of Mississippi.

## COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa. ....	\$7.50*
Foundry, beehive (f.o.b. oven) Fayette Co., W. Va. ....	8.10
Connellsville, Pa. ....	9.00

### Foundry, Byproduct

Chicago, del'd.....	13.75
Chicago, f.o.b. ....	13.00
New England, del'd.....	14.65
Kearny, N. J., f.o.b. ....	13.05
Philadelphia, del'd.....	13.28
Buffalo, del'd.....	13.40
Portsmouth, Ohio, f.o.b.....	11.50
Painesville, Ohio, f.o.b.....	12.15
Erie, del'd.....	13.15
Cleveland, del'd.....	13.20
Cincinnati, del'd.....	13.25
St. Louis, del'd.....	13.75†
Birmingham, del'd.....	10.90

\*Hand drawn ovens using trucked coal permitted to charge \$3.60 per ton plus transportation charges.

†Except producers situated in states other than Missouri, Alabama or Tennessee, sellers may charge a maximum delivered price of \$14.25 in the St. Louis, Mo., and East St. Louis, Ill., switching districts.

## REFRACTORIES

(F.o.b. Works)

	Per 1000
Fire Clay Brick*	
Super-Duty brick, St. Louis.....	\$76.05
First quality, Pa., Md., Ky., Mo., Ill. ....	60.40
First quality, New Jersey.....	65.90
Sec. quality, Pa., Md., Ky., Mo., Ill. ....	54.80
Sec. quality, New Jersey.....	57.70
No. 1 Ohio.....	50.00
Ground fire clay, net ton.....	8.95

### Silica Brick\*

Pennsylvania and Birmingham.....	\$60.40
Chicago District.....	69.30
Silica cement, net ton (Eastern).....	10.60

### Chrome Brick

Standard chemically bonded, Balt., Plymouth Meeting, Chester.....	\$54.00
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### Magnesite Brick

Standard, Balt. and Chester.....	\$76.00
Chemically bonded, Baltimore.....	65.00

### Grain Magnesite

Domestic, f.o.b. Balt. and Chester in sacks (carloads).....	\$48.48
Domestic, f.o.b. Chewelah, Wash. in bulk.....	22.00
in sacks.....	26.00

\*Retroactive to Apr. 1.

## LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports\*)

	Per Gross Ton
Old range, bessemer, 51.50.....	\$4.95
Old range, non-bessemer, 51.50.....	4.80
Mesaba, bessemer, 51.50.....	4.70
Mesaba, non-bessemer, 51.50.....	4.55
High phosphorus, 51.50.....	4.35

\*Adjustments are made to indicate prices based on variance of Fe content of ores as analyzed on a dry basis by independent laboratories.



# PRICES

## WAREHOUSE PRICES

Delivered metropolitan areas per 100 lb. These are zoned warehouse prices in conformance with latest zoning amendment to OPA Price Schedule §9.

Cities	SHEETS			STRIP			Plates 1/4 in. and heavier	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 gage)	Cold Rolled	Galvanized (24 gage)	Hot-Rolled		Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled, NE 8617-20	Hot Rolled, NE 8742-50 Ann.	Cold Drawn, NE 8617-20	Cold Drawn, NE 8742-50 Ann.
				6 in. and Under	Over 6 in.									
**Philadelphia	\$3.743	\$5.097	\$5.218a	\$4.272	\$4.172	\$5.022	\$3.855	\$3.916	\$4.072	\$4.522	\$6.016	\$7.218	\$7.372	\$8.522
New York	3.815	4.838 <sup>3</sup>	5.46	4.324	4.224	5.024	4.018	4.008	4.103	4.553	6.058	7.158	7.403	8.453
Boston	3.999	4.969 <sup>9</sup>	5.674	4.456	4.356	4.965	4.162	4.162	4.294	4.594	6.212	7.312	7.444	8.494
Baltimore	3.619	5.077	5.344	4.252	4.152	.....	3.844	4.009	4.052	4.502	.....	.....	.....	.....
Norfolk	3.996	.....	5.821	4.515	4.415	.....	4.221	4.252	4.315	4.615	.....	.....	.....	.....
Chicago	3.475	4.425	5.581	3.95	3.85	4.901 <sup>7</sup>	3.80	3.80	3.75	4.20	.....	.....	.....	.....
Milwaukee	3.612	4.562 <sup>3</sup>	5.537	4.087	4.077	5.037 <sup>17</sup>	3.937	3.937	3.887	4.337	6.037	7.037	7.187	8.237
Cleveland	3.575	4.625	5.327	3.95	3.85	4.701 <sup>7</sup>	3.65	3.838	3.60	4.20	6.006	.....	6.95	.....
Buffalo	3.575	4.625	5.104/5.20	4.169	4.069	4.919	3.88	3.65	3.60	4.20	5.80	6.90	7.95	8.00
Detroit	3.675	4.725	5.45	4.05	3.95	.....	3.859	3.911	3.70	4.25	6.13	.....	7.259	.....
Cincinnati	3.65	4.70 <sup>3</sup>	5.275	4.025	3.925	4.961	3.911	3.941	3.861	4.461	6.15	.....	7.311	.....
St. Louis	3.622	4.572 <sup>3</sup>	5.581	4.097	3.997	5.181 <sup>17</sup>	3.947	3.947	3.897	4.481	6.181	.....	7.331	.....
Pittsburgh	3.575	4.625	5.20	3.95	3.85	.....	3.65	3.65	3.60	4.20	.....	.....	.....	.....
St. Paul	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Omaha	4.018	5.668	5.965	4.343	4.243	.....	4.343	.....	4.293	4.893	.....	.....	.....	.....
Indianapolis	3.745	4.795	5.37	4.12	4.02	4.99	3.88	3.88	3.83	4.43	6.13	.....	7.28	.....
Birmingham	3.675	.....	5.20	.....	.....	.....	3.80	3.80	3.75	4.903	.....	.....	.....	.....
Memphis	4.19	4.885	5.715	4.565	4.465	.....	4.315	4.315	4.265	4.78	.....	.....	.....	.....
New Orleans	4.283 <sup>*</sup>	5.304	5.808	4.658	4.558	.....	4.408	4.408 <sup>*</sup>	4.358 <sup>*</sup>	5.079	.....	.....	.....	.....
Houston	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	4.70/5.00	6.80/7.20 <sup>3</sup>	6.55	4.95	4.85	.....	4.60/4.95	4.45/4.65	4.40/4.55	6.03/5.683	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seattle	4.87 <sup>12</sup>	7.27 <sup>4</sup>	6.40	4.60	4.50	.....	5.00 <sup>12</sup>	4.70 <sup>12</sup>	4.60 <sup>12</sup>	6.23	.....	.....	.....	.....
Portland	4.87 <sup>11</sup>	6.82 <sup>4</sup>	6.20	5.10	5.00	.....	5.00 <sup>11</sup>	4.70 <sup>11</sup>	4.70 <sup>11</sup>	5.98	8.15	.....	9.20	.....
Salt Lake City	4.75	.....	6.62 <sup>18</sup>	5.88	.....	.....	5.23 <sup>18</sup>	5.23 <sup>18</sup>	5.13	6.35	.....	.....	.....	.....

## BASE QUANTITIES

Standard unless otherwise keyed on prices.

**HOT-ROLLED:** Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

**COLD-ROLLED:** Sheets, 400 to 1499 lb; strip, extras on all quantities; bars, 1500 lb base.

**NE ALLOY BARS:** 1000 to 39,999 lb.

**GALVANIZED SHEETS:** 450 to 1499 lb.

**EXCEPTIONS:** (1) 150 to 499 lb. (2) 150 to 1499 lb. (3) 400 to 1499 lb. (4) 450 to 1499 lb. (5) 500 to 1499 lb. (6) 0 to 199 lb. (7) 400 to 1499 lb. (8) 1000 to 1999 lb. (9) 450 to 3749 lb. (10) 400 to 3999 lb. (11) 300 to 4999 lb. (12) 300 to 10,000 lb. (13) 400 to 14,999 lb. (14) 400 lb and over. (15) 1000 lb and over. (16) 1500 lb and over. (17) 2000 lb and over. (18) 3500 lb and over.

(\*) Philadelphia: Galvanized sheet, 25 or more bundles.

Extra for size, quality, etc., apply on above quotations.

\* Add 0.271¢ for sizes not rolled in Birmingham.

\*\* City of Philadelphia only. Applicable freight rates must be added to basing point prices to obtain delivered price to other localities in metropolitan area.

## PIG IRON PRICES

Maximum per gross ton, effective Mar. 15, 1946. Prices do not reflect 3 pct tax on freight.

BASING POINT PRICES						DELIVERED PRICES (BASE GRADES)								
Basing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Basing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	
Bethlehem	27.00	27.50	28.00	28.50		Boston	Everett	0.50	27.50	28.00	28.50	29.00		
Birdsboro	27.00	27.50	28.00	28.50	32.00	Boston	Birdsboro-Steelton	4.02					38.02	
Birmingham	21.50	22.88		27.50		Brooklyn	Bethlehem	2.50	29.50	30.00	30.50	31.00		
Buffalo	25.50	26.50	27.00	27.50	32.00	Brooklyn	Birdsboro	2.92					34.92	
Chicago	26.00	26.50	26.50	27.00		Canton	Clev, Ygstin, Sharpsvil.	1.39	27.39	27.89	27.89	28.39		
Cleveland	26.00	26.50	26.50	27.00		Canton	Buffalo	3.19					35.10	
Detroit	26.00	26.50	26.50	27.00		Cincinnati	Birmingham	4.06	25.56	26.94				
Duluth	26.50	27.00	27.00	27.50		Cincinnati	Hamilton	1.11			27.61			
Erie	26.00	26.50	27.00	27.50		Cincinnati	Buffalo	4.40					36.40	
Everett	27.00	27.50	28.00	28.50		Jersey City	Bethlehem	1.53	28.53	29.03	29.53	30.03		
Granite City	26.00	26.50	26.50	27.00		Jersey City	Birdsboro	1.94					33.94	
Hamilton	26.00	26.50	26.50			Los Angeles	Provo	4.95	28.95	29.45				
Neville Island	26.00	26.50	26.50	27.00		Los Angeles	Buffalo	15.41					47.41	
Provo	24.00	24.50				Mansfield	Cleveland-Toledo	1.94	27.94	28.44	28.44	28.94		
Sharpsville <sup>1</sup>	26.00	26.00	26.50	27.00		Mansfield	Buffalo	3.36					35.38	
Sparrows Point	27.00	27.50				Philadelphia	Swedeland	0.84	27.84	28.34	28.84	29.34		
Steelton	27.00				32.00	Philadelphia	Birdsboro	1.24					33.24	
Swedeland	27.00	27.50	28.00	28.50		San Francisco	Provo	4.95	28.95	29.45				
Toledo	26.00	26.50	26.50	27.00		San Francisco	Buffalo	15.41					47.41	
Youngstown	26.00	26.50	26.50	27.00		Seattle	Provo	4.95	28.95	29.45				
						Seattle	Buffalo	15.41					47.41	
						St. Louis	Granite City	0.50	26.50	27.00	27.00	27.50		
						St. Louis	Buffalo	7.07					39.07	

(1) Struthers Iron & Steel Co., Struthers, Ohio, may charge 50¢ per ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Charcoal pig iron base prices for Lyles, Tenn., and Lake Superior furnaces, \$33.00 and \$34.00, respectively. Newberry Brand of Lake Superior charcoal iron \$39.00 per g.t., f.o.b. furnace, by order L 39 to RPS 10, Apr. 11, 1945, retroactive to Mar. 7, 1945. Delivered to Chicago, \$42.34. High phosphorus iron sells at Lyles, Tenn., at \$28.50.

Basing point prices are subject to switching charges; silicon differentials (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. Effective Mar. 3, 1943, \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel con-

tent and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron and bessemer ferrosilicon up to and including 14.00 pct silicon covered by RPS 10 as amended. Silvery iron, silicon 6.00 to 6.50 pct, C/L per g.t., f.o.b. Jackson, Ohio—\$32.00; f.o.b. Buffalo—\$33.25. Add \$1.00 per ton for each additional 0.50 pct Si. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for prices of comparable analysis.

# FERROALLOY PRICES

## Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size, f.o.b. Baltimore, Philadelphia, New York, Birmingham, Rockdale, Rockwood, Tenn.  
 Carload lots (bulk) ..... \$135.00  
 Less ton lots (packed) ..... 148.50  
 F.o.b. Pittsburgh ..... 139.50  
 \$1.70 for each 1% above 82% Mn; penalty, \$1.70 for each 1% below 78%.  
 Briquets—per pound of briquet, freight allowed, 66% contained Mn.  
 Eastern Central Western  
 Carload, bulk .. 6.05¢ 6.30¢ 6.60¢  
 Ton lots ..... 6.65¢ 7.55¢ 8.55¢  
 Less ton lots.... 6.80¢ 7.80¢ 8.80¢

## Spiegeleisen

Contract prices, gross ton, lump, f.o.b. Palmerton, Pa.  
 16-19% Mn 19-21% Mn  
 3% max. Si 3% max. Si  
 Carloads ..... \$35.00 \$36.00  
 Less ton ..... 47.50 48.50  
 F.o.b. Pittsburgh, Chicago ..... 40.00

## Manganese Metal

Contract basis, lump size, per pound of metal, f.o.b. shipping point, freight allowed.  
 96-98% Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.  
 Carload, bulk ..... 30¢  
 L.c.l. lots ..... 32¢

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.  
 Carloads ..... 34¢  
 Ton lots ..... 36¢  
 Less ton lots ..... 38¢

## Low-Carbon Ferromanganese

Contract price per pound Mn contained, lump size, f.o.b. shipping point, freight allowed, eastern zone.  
 Carloads Ton Less  
 0.10% max. C, 0.06% P, 90% Mn ..... 21.00¢ 21.40¢ 21.65¢  
 0.10% max. C ..... 20.50¢ 20.90¢ 21.15¢  
 0.15% max. C ..... 20.00¢ 20.40¢ 20.65¢  
 0.30% max. C ..... 19.50¢ 19.90¢ 20.15¢  
 0.50% max. C ..... 19.00¢ 19.40¢ 19.65¢  
 0.75% max. C ..... 18.00¢ 18.40¢ 18.65¢  
 7.00% max. Si... 18.00¢ 16.40¢ 16.65¢

## Silicomanganese

Contract basis, lump size, per pound of metal, f.o.b. shipping point, freight allowed, 65-70% Mn, 17-20% Si, 1.5% max. C.  
 Carload, bulk ..... 6.05¢  
 Ton lots ..... 6.70¢  
 Briquet, contract basis, carlots, bulk, freight allowed, per lb. of briquet ..... 5.80¢  
 Ton lots ..... 6.30¢  
 Less ton lots ..... 6.55¢

## Silvery Iron (electric furnace)

Si 14.01 to 14.50%, \$48.75 f.o.b. Keokuk, Iowa; \$46.75 f.o.b. Niagara Falls. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 per ton for low impurities, not to exceed: P—0.05%, S—0.04%, C—1.00%. Covered by MPR 405.

## Silicon Metal

Contract price per pound contained Si, lump size, f.o.b. shipping point, freight allowed, for ton lots, packed.  
 Eastern Central Western  
 96% Si, 2% Fe.. 13.10¢ 13.55¢ 16.50¢  
 97% Si, 1% Fe.. 13.45¢ 13.90¢ 16.80¢

## Ferrosilicon Briquets

Contract price per pound of briquet, bulk, f.o.b. shipping point, freight allowed to destination, 40% Si.  
 Eastern Central Western  
 Carload, bulk .. 3.35¢ 3.50¢ 3.65¢  
 Ton lots ..... 3.80¢ 4.20¢ 4.25¢

## Electric Ferrosilicon

Contract price per pound contained Si, lump size in carloads, f.o.b. shipping point, freight allowed.  
 Eastern Central Western  
 50% Si ..... 6.65¢ 7.10¢ 7.25¢  
 75% Si ..... 8.05¢ 8.20¢ 8.75¢  
 80-90% Si .. 8.90¢ 9.05¢ 9.55¢  
 90-95% Si .. 11.05¢ 11.20¢ 11.65¢

## Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices per pound, contained Cr, lump size in carloads, f.o.b. shipping point, freight allowed.  
 Eastern Central Western  
 0.06% C ..... 23.00¢ 23.40¢ 24.00¢  
 0.10% C ..... 22.50¢ 22.90¢ 23.50¢  
 0.15% C ..... 22.00¢ 22.40¢ 23.00¢  
 0.20% C ..... 21.50¢ 21.90¢ 22.50¢  
 0.50% C ..... 21.00¢ 21.40¢ 22.00¢  
 1.00% C ..... 20.50¢ 20.90¢ 21.50¢  
 2.00% C ..... 19.50¢ 19.90¢ 20.50¢  
 66-71% Cr, 4-10% C ... 13.00¢ 13.40¢ 14.00¢  
 62-66% Cr, 5-7% C ... 13.50¢ 13.90¢ 14.50¢  
 Briquets—contract price per pound of briquet, f.o.b. shipping point, freight allowed, 60% chromium.  
 Eastern Central Western  
 Carload, bulk .. 8.25¢ 8.55¢ 8.95¢  
 Ton lots ..... 8.75¢ 9.25¢ 10.75¢  
 Less ton lots... 9.00¢ 9.50¢ 11.00¢

## High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 2¢ per lb to regular low-carbon ferrochrome price schedule. Add 2¢ for each additional 0.25% N. High-carbon type: 66-71% Cr, 4-5% C, 0.75% N. Add 5¢ per lb to regular high-carbon ferrochrome price schedule.

## S. M. Ferrochrome

Contract price per pound chromium contained, lump size, f.o.b. shipping point, freight allowed.  
 High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.  
 Eastern Central Western  
 Carload ..... 14.00 14.40 15.00  
 Ton lots ..... 14.90 15.55 16.75  
 Less ton lots .. 15.40 16.05 17.25  
 Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25 max. C.  
 Eastern Central Western  
 Carload ..... 20.00 20.40 21.00  
 Ton lots ..... 21.00 21.65 22.85  
 Less ton lots .. 21.00 22.65 23.85

## Chromium Metal

Contract prices per pound, chromium contained, carload, f.o.b. shipping point, freight allowed. 97% min. Cr, 1% max. Fe.  
 Eastern Central Western  
 0.20% max. C .. 83.50 85.00 86.25  
 0.50% max. C .. 79.50 81.00 82.25  
 9.00% min. C .. 79.50 81.00 82.25

## Chromium—Copper

Contract price per pound of alloy, f.o.b. Niagara Falls, freight allowed east of the Mississippi. 8-11% Cr, 88-90% Cu, 1.00% max. Fe, 0.50% max. Si.  
 Shot or ingot ..... 45¢

## Calcium—Silicon

Contract price per lb of alloy, lump, f.o.b. shipping point, freight allowed.  
 30-35% Ca, 60-65% Si, 3.00% max. Fe or 28-32% Ca, 60-65% Si, 6.00% max. Fe.  
 Eastern Central Western  
 Carloads ..... 13.00 13.50 15.55  
 Ton lots ..... 14.50 15.25 17.40  
 Less ton lots .. 15.50 16.25 18.40

## Calcium—Manganese—Silicon

Contract prices per pound of alloy, lump, f.o.b. shipping point, freight allowed.  
 16-20% Ca, 14-18% mn, 53-59% Si.  
 Eastern Central Western  
 Carloads ..... 15.50¢ 16.00¢ 18.05¢  
 Ton lots ..... 16.50¢ 17.35¢ 19.10¢  
 Less ton lots .. 17.00¢ 17.85¢ 19.60¢

## Calcium Metal

Eastern zone contract prices per pound of metal, f.o.b. shipping point, freight allowed. Add 1¢ for central zone; 5¢ for western zone.  
 Cast Turnings Distilled  
 Ton lots ..... \$1.35 \$1.75 \$4.25  
 Less ton lots.. 1.60 2.00 5.00

## CMSZ

Contract price per pound of alloy, f.o.b. shipping point, freight allowed.  
 Eastern Central Western  
 Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.  
 Ton lots ..... 12.00¢ 12.75¢ 14.75¢  
 Less ton lots 12.50¢ 13.25¢ 15.25¢  
 Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.  
 Ton lots ..... 11.75¢ 12.50¢ 14.50¢  
 Less ton lots 12.25¢ 13.00¢ 15.00¢

## SMZ

Contract price per pound of alloy, f.o.b. shipping point, freight allowed. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe.  
 Eastern Central Western  
 Ton lots ..... 12.00¢ 12.85¢ 14.60¢  
 Less ton lots 12.50¢ 13.35¢ 15.10¢

## Other Ferroalloys

Ferrotungsten, standard, lump or ¼X down, packed, f.o.b. plant  
 Niagara Falls, Washington, Pa., York, Pa., per pound contained T, 5 ton lots, freight allowed... \$1.88  
 Ferrovandium, 35-55%, contract basis, f.o.b. plant, freight allowances, per pound contained V...  
 Openhearth ..... \$2.70  
 Crucible ..... \$2.80  
 High speed steel (Primos) .. \$2.90  
 Vanadium pentoxide, 88-92% V<sub>2</sub>O<sub>5</sub> technical grade, contract basis, per pound contained V<sub>2</sub>O<sub>5</sub> ..... \$1.10  
 Ferrocolumbium, 60-60%, contract basis, f.o.b. plant, freight allowed, per pound contained Cb. Ton lots ..... \$2.25  
 Less ton lots ..... \$2.30  
 Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo ..... 95¢  
 Calcium molybdate, 40-45%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo ..... 80¢  
 Molybdenum oxide briquets, 48-52% Mo, f.o.b. Langeloth, Pa., per pound contained Mo ..... 80¢  
 Molybdenum oxide, in cans, f.o.b. Langeloth and Washington, Pa., per pound contained Mo ..... 80¢  
 Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti ..... \$1.23  
 Less ton lots ..... \$1.25  
 Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti ..... \$1.35  
 Less ton lots ..... \$1.40  
 High-carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads ..... \$142.50  
 Ferrophosphorus, 18%, electric or blast furnaces, f.o.b. Anniston, Ala., carlots, with \$3 unitage freight equalled with Rockdale, Tenn., per gross ton ..... \$58.50  
 Ferrophosphorus, Electrolytic, 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage freight equalled with Nashville, per gross ton ..... \$75.00  
 Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy. Carload lots ..... 14¢  
 Zirconium, 12-15%, contract basis, lump, f.o.b. plant, freight allowed, per pound of alloy. Carload, bulk ..... 4.60¢  
 Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Niagara Falls, carload ..... 5.75¢  
 Ton lots ..... 7.25¢  
 Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound. Car lots ..... 8.00¢  
 Ton lots ..... 8.75¢  
 Less ton lots ..... 9.25¢  
**Boron Agents**  
 Contract prices per pound of alloy, f.o.b. shipping point, freight allowed.  
 Ferroboreon, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C.  
 Eastern Central Western  
 Less ton lots... \$1.30 \$1.3075 \$1.329  
**Manganese—Boron** 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C.  
 Ton lots ..... \$1.89 \$1.903 \$1.935  
 Less ton lots... 2.01 2.023 2.055  
**Nickel—Boron** 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni.  
 Less ton lots. \$2.10 \$2.1125 \$2.1445  
 Silcaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy. Carload lots ..... 25¢  
 Ton lots ..... 20¢  
 Silvaz No. 3, contract basis, f.o.b. plant, freight allowed, per pound of alloy. Carload lots ..... 58¢  
 Ton lots ..... 59¢  
 Grainal, f.o.b. Bridgeville, Pa., freight allowed, 50 lb and over.  
 No. 1 ..... 87.5¢  
 No. 6 ..... 60¢  
 No. 79 ..... 45¢  
 Bortram, f.o.b. Niagara Falls  
 Ton lots, per pound ..... 45¢  
 Less ton lots, per pound..... 50¢



## Belgian Steel Firms To Get 13 Pct More In Coke Allocations

London

••• The Belgian steel industry is to receive 13 pct more coke and the allocations of ceramics and refractory products to manufacturers will be increased, according to an article in the *British Board of Trade Journal* by the Brussels Commercial Counsellor.

During the German occupation of Belgium steel production was kept at about two thirds capacity until 1944, and the number of workers in the Belgian mines was maintained at almost prewar level until just before liberation when deportations were increased to meet the pressing need for manpower in Germany.

From an industrial standpoint Belgium has always been closely connected with Germany, especially with the Ruhr, and it is believed that the policy of keeping Belgian production alive arose from the German intention to incorporate Belgium into the industrial system of the Reich.

This policy conformed well with the Belgians' own interests, for as long as there was some activity employers were able to look after their workers by providing extra meals and comforts, and where the production of war materials was demanded a considerable amount of sabotage was possible.

The country is accordingly in the strong position of entering the postwar period with practically no reconversion problem regarding industrial equipment or labor.

The chief economic problem immediately following liberation was coal production, on which in Belgium as in the United Kingdom all industry depends. At the end of 1944 production was almost negligible, and a shortage of pitprops on account of the Ardennes offensive, the hard winter, and labor troubles closed the mines.

Great efforts were made by increased wages, rations and supplies to find the labor and equipment necessary to restore coal production to a reasonable level, but it was not until December, 1945, more

(CONCLUDED ON PAGE 126)

# Better cleaning of metal parts thru MECHANIZED HANDLING



In your plans covering the production or maintenance cleaning of metal parts, a new complete line of OPTIMUS EQUIPMENT units offer your plant operating men a number of outstanding advantages.

These new OPTIMUS machines enable the combining of operations in one nearby sequence, they assist you in obtaining the best control of quality in your metal cleaning and allied process operations. "Rejects" can be lowered, bottlenecks eliminated, production speeded up, with their use.

If you are crowded for space, if you

need to cut labor costs, eliminate needless "toting" of your metal parts — an OPTIMUS Plan for the mechanized handling of your metal parts through washing, rinsing and drying, can help you.

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An illustrated bulletin describing these new OPTIMUS Machines for metal parts cleaning is now in preparation, and will be sent to manufacturers interested in better handling of their parts cleaning operations. If you would like to receive a copy of the bulletin when it is ready, simply fill out and mail the coupon today.

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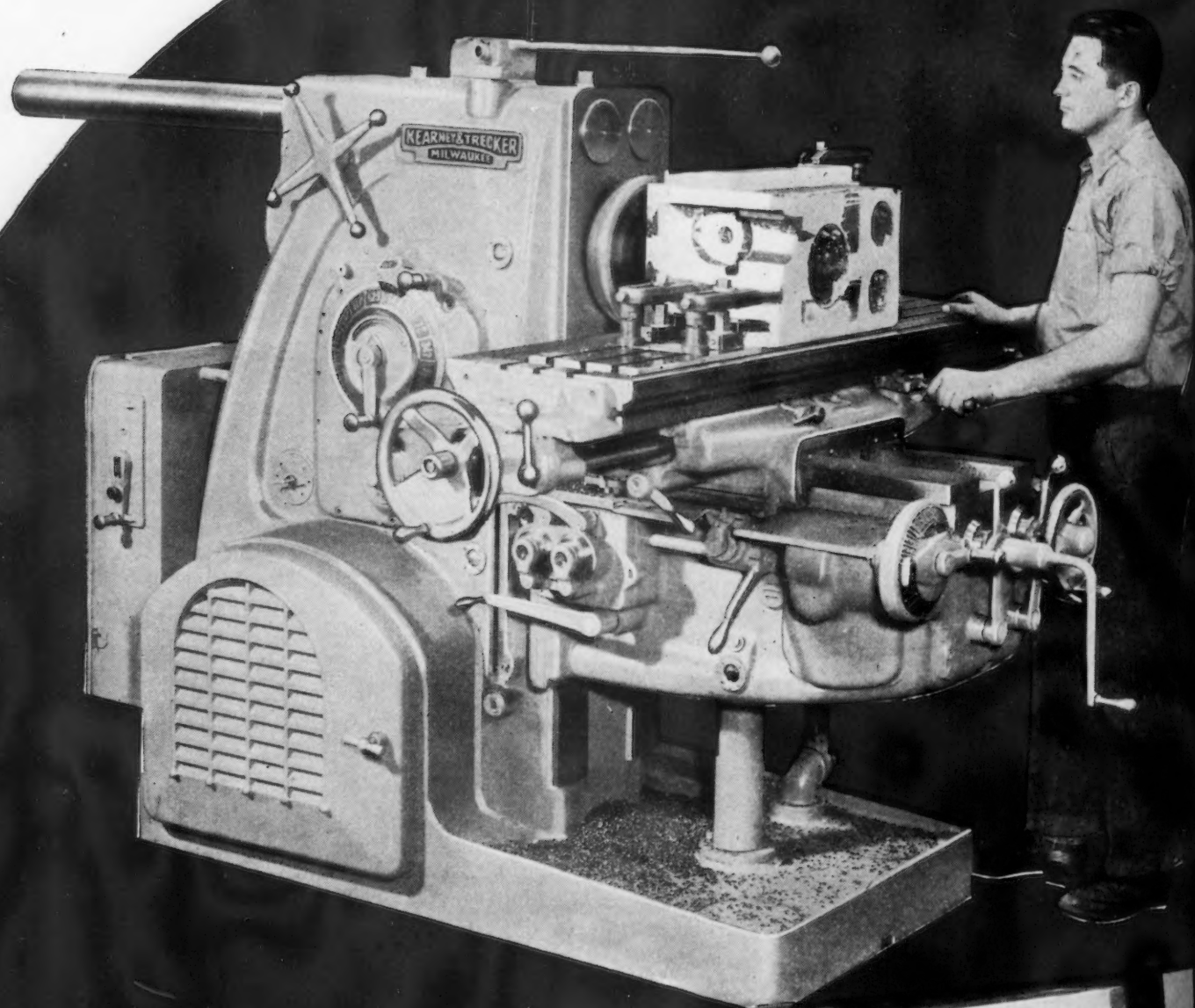
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Using a 30 hp Kearney & Trecker CSM Horizontal with carbide cutters, total production time reduced 43% on this face milling operation.

Production details: — Workpiece — spindle block; material — cast iron; cutter — 12 inch — 26 tooth, full-back face mill; surface speed—295 sfm; feed per tooth — .014 inch; depth of cut — 3/16 inch to 1/4 inch.

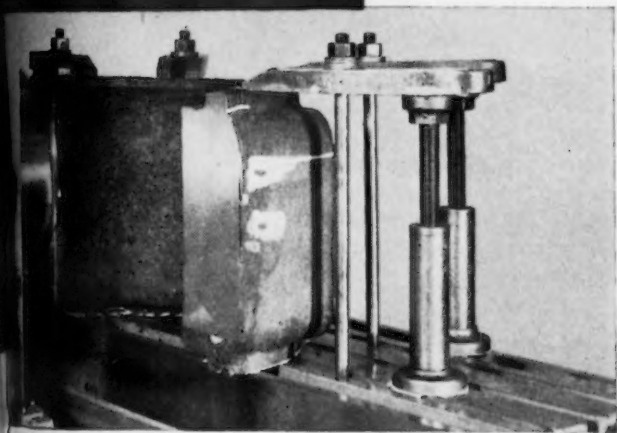


# Machines of Their Type!

20-30-50 hp

## Kearney & Trecker CSM's

- ★ You get new high rates of metal removal—ferrous and non-ferrous—without sacrifice of precision.
- ★ —you get closer tolerances—finer finishes—precision performance — through smooth flow of power to the cutter.
- ★ —expressly designed for carbide milling of steel but adapted to all-purpose milling, as well.
- ★ —broad range of application — wide range of speeds and feeds.
- ★ —exceptional ease of operation — centralized conveniently located controls.



*Machine Time Reduced 87%:—surface finishes improved when this operation was performed on a 20 hp CSM Horizontal using carbide milling cutters! Workpiece — bearing shell; material — cast steel; cutter — 10 inch, 12 tooth CSM face mill; surface speed — 460 sfm; feed per tooth — .010 inch; depth of cut — 3/16 inch to 1/4 inch.*

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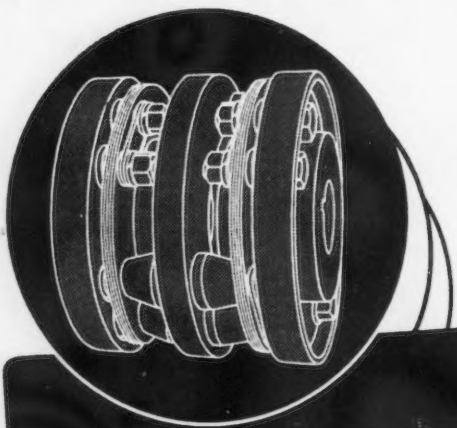
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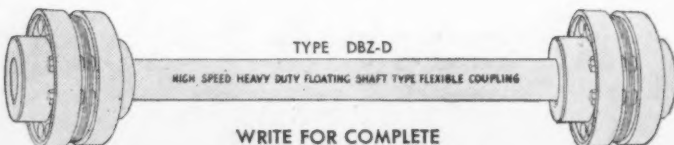
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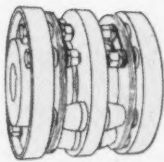
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**BACKLASH, FRICTION,  
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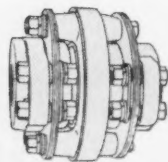
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rubber or grids to drive. All power  
is transmitted by direct pull.



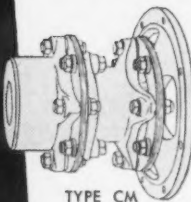
WRITE FOR COMPLETE  
ENGINEERING CATALOG



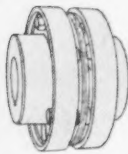
TYPE DBZ



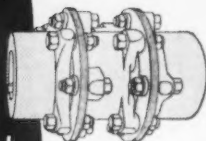
TYPE DSM



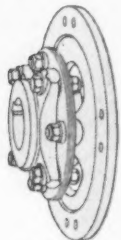
TYPE CM



TYPE ST



TYPE AM



TYPE SS

**THOMAS FLEXIBLE COUPLING CO.**  
WARREN, PENNSYLVANIA

## NEWS OF INDUSTRY

(CONTINUED FROM PAGE 123)

than a year after liberation, that the Belgian Prime Minister was able to announce that the coal battle had been won.

With the aid of some 30,000 prisoners of war, production is now only 20 pct below the prewar level, and with the help of imported fuel from Germany, United Kingdom and United States, it has been possible after meeting the winter household requirements of the population, to provide fuel for industry up to an average of 50 pct. Allocations of coal to industry for March exceeded the January figure by 32 pct.

During this fight for fuel arrangements were underway to import essential raw materials to feed Belgian industry. Owing to stocks on hand at liberation the manufacturers were able to operate at a very reduced rate for two or three months in order to give the government sufficient time to obtain and ship supplies of ores, wool, cotton, and other essential raw materials through their purchasing missions in Washington and London. The result has been better than was expected and at present the stock position is very satisfactory.

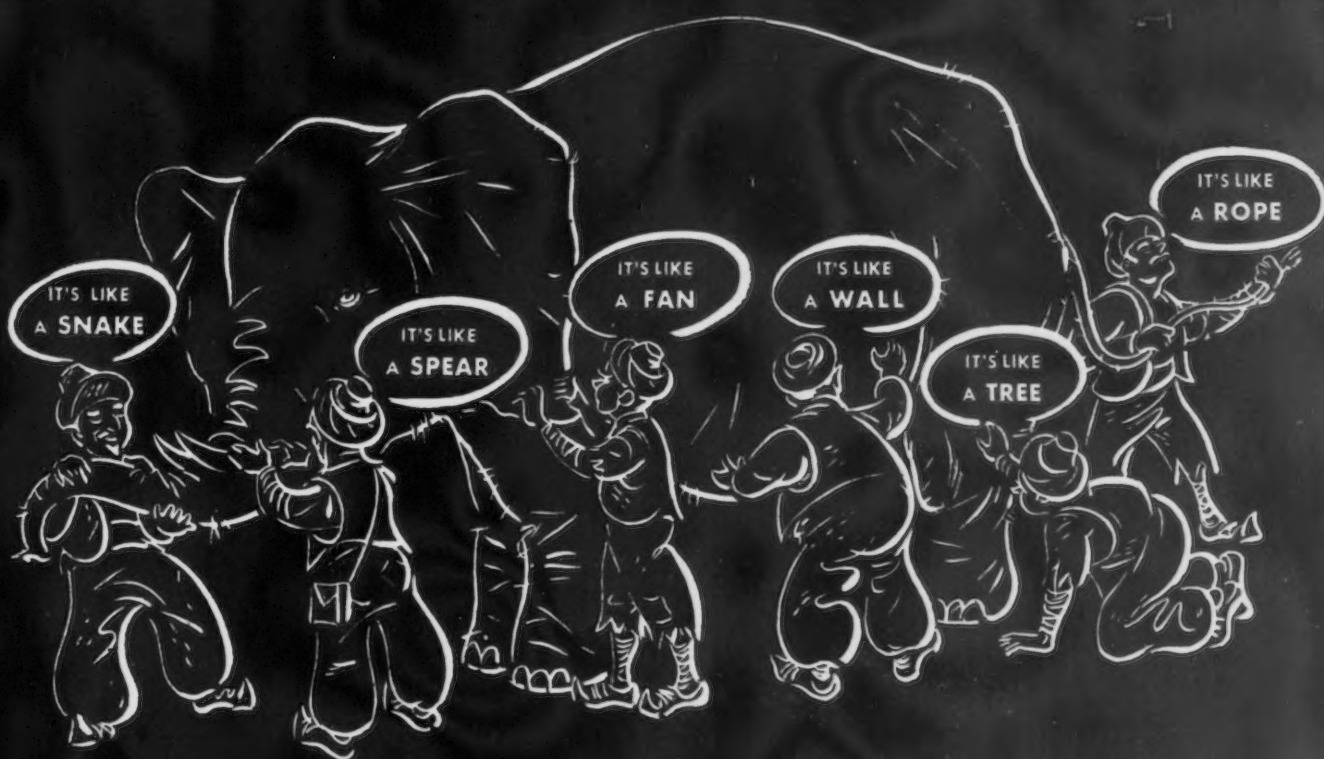
Before the war Belgium had to import almost half of her food requirements, and to pay for these and for the raw materials to supply her factories she exported goods to the value of more than \$4000 billion.

It is essential for the country to regain its prewar position in international trade, but until the general price level is reduced Belgium cannot hope to compete in the export markets.

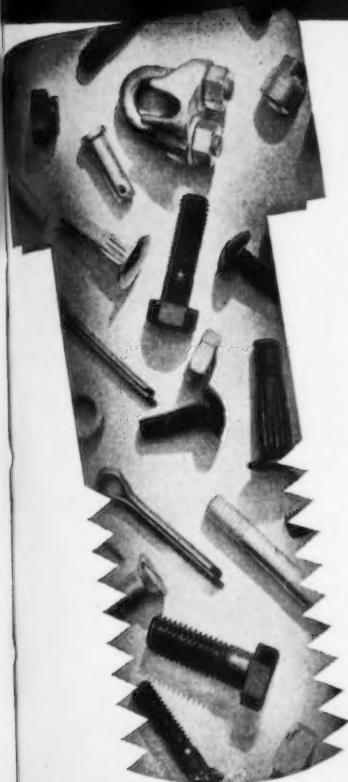
Exports included metals and metal manufactures, textiles, diamonds, chemicals, machinery, leather goods, cement and almost every other manufactured product. About half of her exports went to European countries, with France, Holland and Germany as good customers.

Imports came from France, Germany, Holland, Russia the United States, and the United Kingdom, and during 1946 while over 8 million tons of goods were imported into Belgium, her exports amounted only to about 1½ million tons.





## It all depends on your point of view



*SIX BLIND HINDUS argued furiously, so the old fable goes, about the appearance of an elephant, which none had ever seen. Permitted to touch an elephant, each obtained a different idea of what the animal was like, and the argument continued, for each now was sure his conception was correct from his point of view.*

Ever so often a customer tells us . . . "I didn't know you made **THAT!**" And when that happens we realize once again that to some customers, Lamson & Sessions is a source of supply for *stove bolts* . . . to another, a source of "1035" *cap screws* . . . and to still another, a source of *machine and carriage bolts*. During the war period, Lamson & Sessions became known to many new customers. To some of those we were primary producers of *tractor bolts* . . . or close tolerance *aircraft studs, bolts, and nuts* . . . and to still others we are a source for *Lamson Lock Nuts*, only. These customers, we realize, never had reason to buy anything else from us, never needed anything else, and therefore never cared what else we made.

As a matter of fact The Lamson & Sessions Company is one of a very small group of "full line" manufacturers—offering a complete line of almost every conceivable standard fastening—and making "special" headed and threaded products to specifications.

Since there are over 400,000 *standard* fastenings (types and sizes) made by the bolt industry, it is reasonable that our salesmen never will get around to reminding you of all of them. However, you can be reasonably sure that if it is a headed and threaded product, Lamson & Sessions *makes it*.

Right now Lamson & Sessions has open capacity for making very large bolts and cap screws. Some of our bolt-making equipment is scheduled for months ahead, but other departments have a comparatively small back-log of orders. Send your inquiries to Lamson for products of 1/2-inch x 6-inch and larger, and we can probably give you unusually prompt service *for the time being*.

THE LAMSON & SESSIONS COMPANY, 1971 West 85th Street, Cleveland 2, Ohio  
Plants at Cleveland and Kent, Ohio; Chicago and Birmingham

BOLTS AND NUTS • LAG SCREWS • SEMS • LOCK NUTS • CAP SCREWS • COTTERS • SET SCREWS • DARDELET RIVET BOLTS • KEY BOLTS

# LAMSON & SESSIONS

Ask your Jobber for the Lamson Line

STUDS • STOVE BOLTS • SHEET METAL SCREWS • WIRE ROPE CLIPS • PIPE PLUGS • WEATHER-TIGHT BOLTS • MACHINE SCREWS AND NUTS • SPECIALS



**AT A BIG AIRPORT JOB**  
J&L Permaset, Precisionbilt wire rope  
is being reeved on a power shovel

DRAWN FOR JONES & LAUGHLIN STEEL CORPORATION BY ORISON MAC PHERSON





## J&L WIRE ROPE SPEEDS BUILDING OF GREAT AIRPORTS AND HIGHWAYS THAT WILL SERVE YOU WELL

With the help of strong, sinewy, flexible steel wire rope, long-dreamed-of projects for great airports and highways to serve you are fast becoming realities. Gigantic earthmoving machines are working on these big construction jobs . . . mightily, irresistibly, yet speedily . . . with wire rope applying and guiding their tremendous power.

Using big power shovels, bulldozers, tractors, pushers, graders, motor scrapers, dump trailers—all manipulated by wire rope—contractors are cutting off mountain tops, filling in valleys, moving and leveling millions of cubic yards of rock and earth to provide mile-long landing strips for your flights across the nation or overseas. They are slashing through foothills, bridging streams, leveling depressions in the plains so that you can make time from city to city on express highways with easy grades, wide curves and no traffic lights.

To rig equipment for these big jobs, many contractors specify Jones & Laughlin wire rope—made of J&L Controlled Quality steel. They have found this Precisionbilt, Permaset, preformed wire rope will outlast regular wire rope, stand up under extra heavy service, keep their equipment operating with a minimum of down time, help them speed to completion the new airports and highways you are eagerly waiting to use.

## JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH, PENNSYLVANIA



LIGHTER, STRONGER, CONTROLLED QUALITY STEELS

## WINGS & WHEELS

Imagine building today's airports and express highways with the horse-drawn scoops (see small sketch), stone-bed wagons, two-wheeled dump carts, mattocks, sledges, picks, shovels and other hand tools of 50 years ago! In that era roads were local and unpaved, airports undreamed of, the internal combustion engine, gasoline and steel in abundance just dawning upon the industrial scene and steel wire rope still in its infancy.

**3,050 new airports** and improvement of 1,625 of the 3,000 existing fields are proposed by the CAA at cost of \$1,250,000,000.

**Leveling off 4 mountains** and filling valleys is record-making earthmoving job at site for Kanawha Airport in rugged terrain near Charleston, W. Va. The grading totals more than 9,700,000 cubic yards, involves extraordinary depths and quantities of both cuts and fills. Nearly every type of earthmoving and grading equipment is being used, most of it depending upon wire rope for control or transmission of power. Job will be completed this year.

**Wartime necessities** more than doubled the capacity of J&L's modern wire rope plant at Muncy, Pa.

**National roads**, planned for new Federal 40,000-mile system of interstate highways connecting practically every city of 100,000 or more will carry 20% of all motor traffic (expected to reach 40,000,000 vehicles by 1950), have entrances and exits only at selected points, with 300-ft. fenced right-of-way, grade separations, no stop lights, four-lane pavement, moderate grades.

**Arterial highways through cities** are being planned by Pittsburgh, Washington, Houston, Dallas, San Antonio, Fort Worth, Detroit, Denver, Chicago, Atlanta, Hartford, Los Angeles, San Francisco.

**Plane landing every 24 seconds** and one taking off every 24 seconds is capacity planned for new world airport under construction at Idlewild, L.I., close to midtown Manhattan. Gradual development is planned for pin-wheel design of runways around central loading hub and three-mile-long arcade building with space for loading 104 planes at one time. Idlewild will be eight times area of LaGuardia Field, require personnel of 30,000 to 50,000, provide parking space for 30,000 autos, have 4-story administration building with observation decks, restaurants, hotel rooms, offices.

**4,000 miles of wire** are wound in a 24-hour day (taking .041-inch wire as the average) in the wire re-winding department of the J&L Wire Rope Plant.

**Illustrated J&L wire rope book**, with information for users of wire lines, may be obtained by writing on business letterhead to: Publicity Manager, Jones & Laughlin Steel Corporation, Pittsburgh 30, Pa.

COPYRIGHT 1946, JONES & LAUGHLIN STEEL CORPORATION

## Niagara Aero After Cooler Protects Air Processes from Moisture Damage

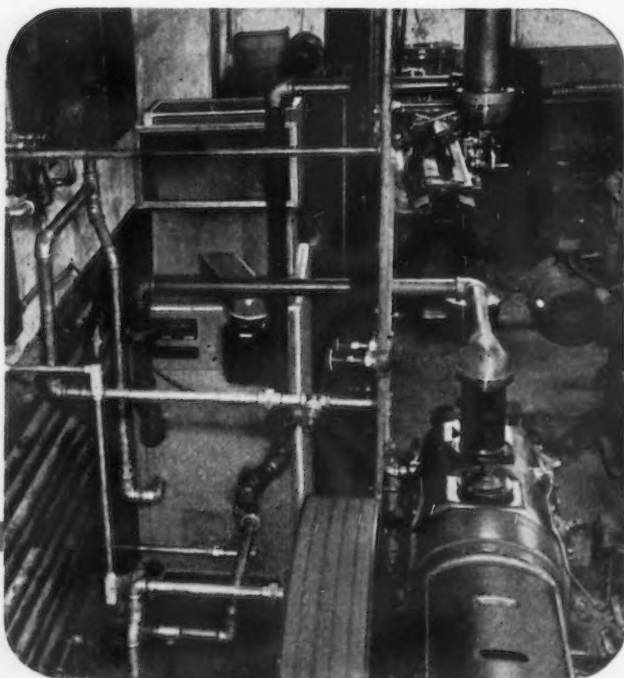
Industries requiring dry compressed air need the Niagara Aero After Cooler. It provides cleaner, drier air for pneumatic tools, spray guns, sand and shot blast equipment, air cleaning nozzles and situations where air is introduced into materials in process.

The Niagara Aero After Cooler is based on the evaporative cooling principle. It does not consume cooling water and thus pays for itself quickly from savings in water bills. The patented "Balanced Wet Bulb" method assures the lowest air temperature, and controls exactly the jacket water temperature.

Write for Niagara Bulletins 96 and 98 for further information. Protection of air tools from moisture damages and saving in repairs makes the Niagara Aero After Cooler worth investigating.

### NIAGARA BLOWER COMPANY

*Over 30 Years of Service in Industrial Air Engineering*  
DEPT. IA-56, 6 E. 45th St., NEW YORK 17, N. Y.  
*Field Engineering Offices in Principal Cities*



INDUSTRIAL COOLING

HEATING • DRYING

**NIAGARA**

HUMIDIFYING • AIR ENGINEERING EQUIPMENT

## Gallup Polls

(CONTINUED FROM PAGE 97)

nothing new. Between 1917 and 1930, for example, individual states throughout the country paid \$500,000,000 or thereabouts to their war veterans.

On the federal level, three separate bills are now before Congress to provide bonuses over and above benefits already allowed. The bills are reported to be in the committee stage now, with no hearings scheduled to be held on them this session.

• • • The American public thinks it is a good idea to have officers and enlisted men eat the same food, attend the same clubs, enjoy the same social privileges.

This would indicate that the average American is strongly on the side of those now advocating closing the gap between officers and enlisted men in the Army—a plea often made by the GI's.

There are few problems in military circles which hold the interest that this one does.

In fact, so important has the issue come to be regarded that a six-man board appointed by Secretary of War Robert P. Patterson recently listened to a long list of witnesses, and read hundreds of letters on what is right or wrong with the army as it now stacks up, with a view to recommending sharp changes, if necessary.

Upon what is eventually done in connection with the problem may depend the success of America's program of building a volunteer army.

Public thinking on the issue is clearly reflected in replies to the following question, asked of rank and file Americans in all parts of the United States:

"Do you think it would be a good idea or a poor idea if army officers and enlisted men had the same food, clubs, and social privileges?"

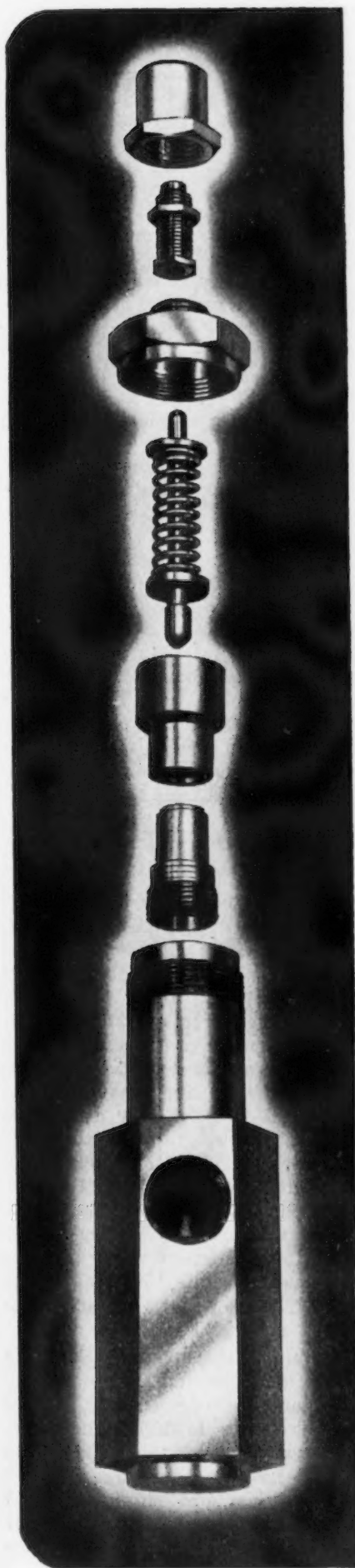
The replies across the nation add up like this:

	Pct
Good idea .....	72
Poor idea .....	20
No opinion .....	8

World War II veterans, including a representation of both officers and enlisted personnel, are even more in favor of the idea than the public at large.

This is shown by a tabulation of





Pressure Valve by Farris Engineering Co.



## What you can do with STAINLESS STEEL BARS!

Used with corrosive chemicals, this high pressure relief valve is rated to 10,000 pounds. It's made wholly from stainless bar stock... note the variety of applications. For extra corrosion resistance both seat and disc are type 316; where abrasive service is indicated, heat treated type 440C is substituted. The stem, top, adjusting screw, and cap are all turned from free machining type 303.

The spring is a story in itself. To meet service requirements, tempered stainless is cold passed 4 times through dies to a narrow range of physicals—then precisely coiled to develop a predetermined rating for pressures and overpressures.

Versatility? You have it and then some with stainless. And the quick availability of so many bar types makes it even more useful. Frasse stocks stainless in 7 different bar types alone, from type 302 to 440F. In addition to the popular 302 and 303, complete size ranges are maintained in types 304 and 316. Or, if you require, you can choose type 416—even 440C and 440C-F—right from stock, for immediate use.

You'll find it economical and convenient, when you work with stainless bars, to work from Frasse stocks. No need to carry heavy inventories, for one thing. And quick delivery on a wide choice of types for another. Call us. Peter A. Frasse and Co., Inc., 17 Grand St., New York 13, N. Y. (Walker 5-2200) 3911 Wissabickon Ave., Philadelphia 29, Pa. (Radcliff 7100) 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) Jersey City • Hartford • Rochester • Syracuse • Baltimore

# FRASSE



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Use this latest Frasse Inventory!

This latest Frasse stainless inventory lists over 700 items—right in stock, ready for immediate shipment to your plant. Shows actual quantities, analyses and finishes of quickly available bars, sheets, strip, plates, pipe, tubing, etc. Mail the coupon or call for your free copy today!

## Stainless Steels and Tubing

**Peter A. FRASSE & Co., Inc.** 31-I  
17 Grand Street, New York 13, N.Y.

Gentlemen:

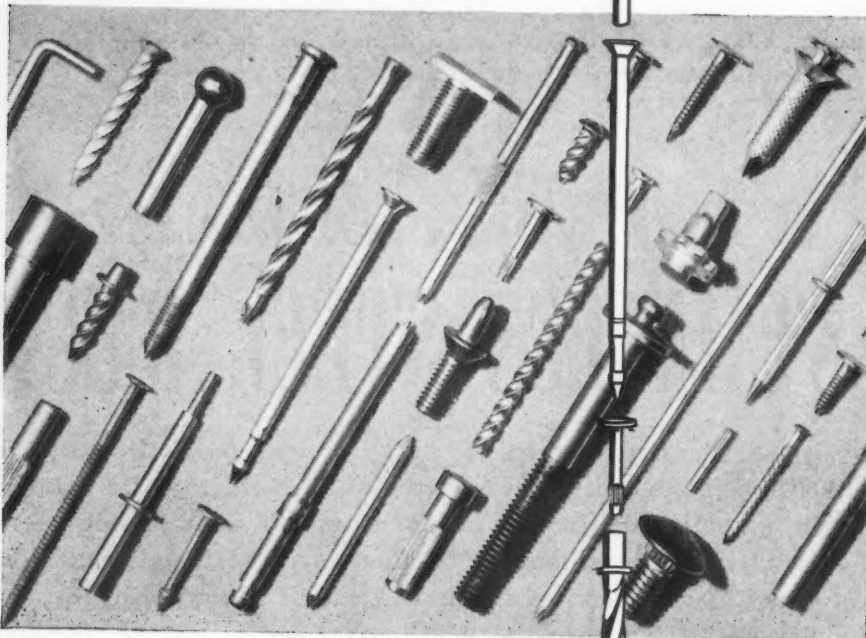
Please send me your inventory of stainless steels immediately available from Frasse stocks.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

# Specialties



## Cold-forged at a saving

*If you need a special rivet, nail or threaded part—and soon—we can make it for you. Cold-forging offers you not only surprisingly quick delivery, but a substantial saving as well.*

*Steel, Stainless Steel, Monel, Brass, Copper, Bronze, Aluminum and Aluminum Alloys are everyday materials to us. A varied stock of sizes and metals is available to serve you.*

*Both economy of manufacture and strength of product are obtainable by using cold-headed parts. Send us a sketch or sample of your part. No obligation. Ask for free catalog.*

## JOHN HASSALL, INC.

405 OAKLAND ST., BROOKLYN 22, N. Y.



*Special nails, rivets, screws*

*and threaded parts*

## NEWS OF INDUSTRY

replies given by veterans of the recent war:

	Pct
Good idea .....	78
Poor idea .....	19
No opinion .....	3

When the replies of former officers and enlisted men are separated, officers are found dividing about evenly on the question. Former GI's run better than seven to one (86 pct) favoring eliminating special privileges for officers. Only two pct among discharged enlisted men offer no opinion.

These facts indicate two things: One, former GI's didn't like things the way they were—86 pct favor change. Two, they are inclined to feel strongly on the subject; only two pct had no opinion.

Some of the changes which are reported under consideration by the Army: (1) Make uniforms of enlisted men and officers more alike, (2) Make courts martial procedure more democratic, (3) Give GI day-to-day gripes more consideration, (4) Work out more attractive system of promotions, (5) Cut down or eliminate menial tasks like KP, (6) Punish more effectively abuse of privileges by officers, (7) Publish a new code of rights for GI's.

## London Economist

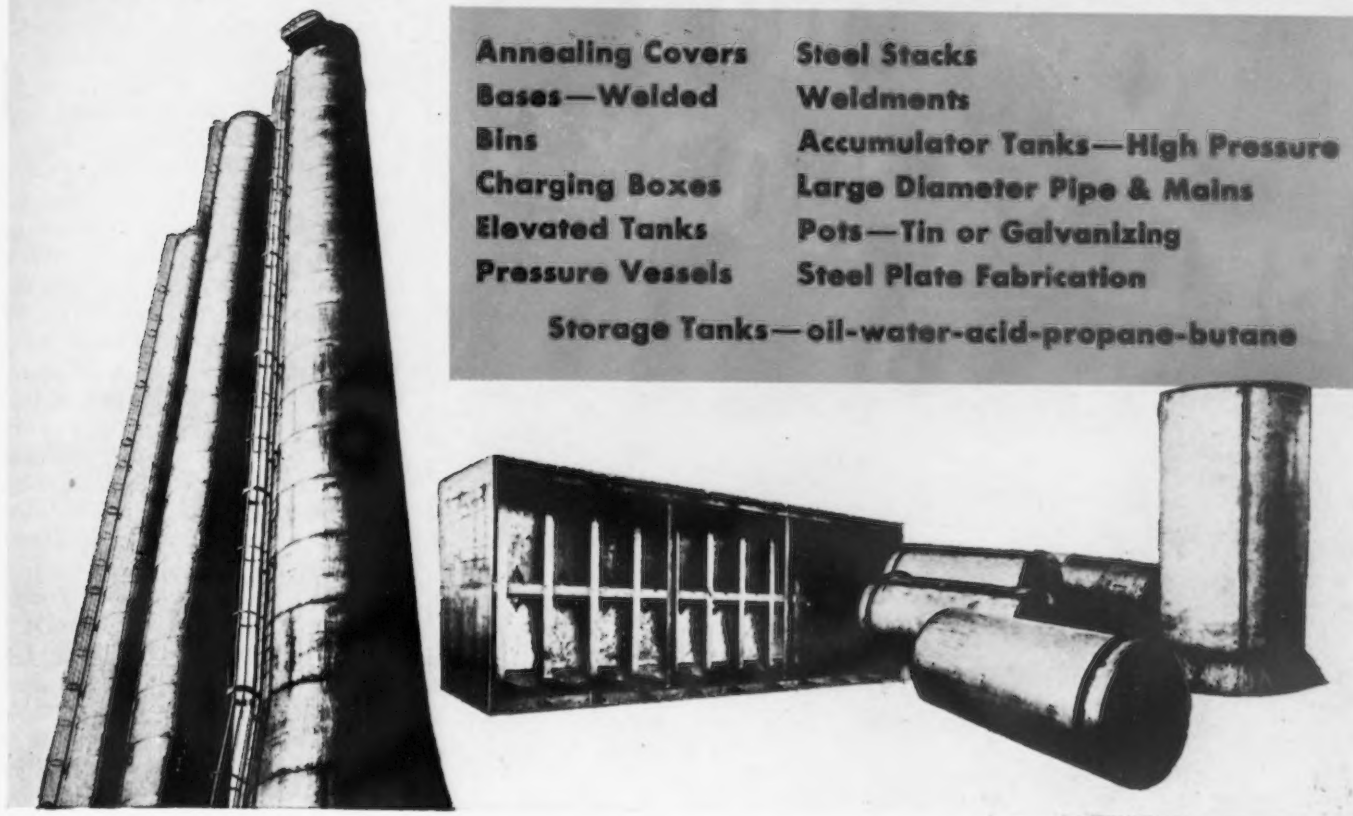
(CONTINUED FROM PAGE 103)

able material, could be so denatured as to make it unusable for atomic weapons, while still remaining perfectly serviceable for the non-dangerous uses of atomic energy. It is possible to remove the "denaturant," but only at the cost of very large plants and the expenditure of much time and money. These technical facts, if they can be regarded as such, provide the basis of the plan. What is needed is a single trustworthy monopolist who, alone in the world, is allowed to mine uranium, to produce U235 and to experiment with it in its undenatured state. National states would be allowed to acquire denatured material only.

It should be apparent that this is an immense simplification of the problem of enforcement. Before the possibility of denaturing arose, it seemed as if the inspectorate would have to supervise not only the original production of U235 but also every use of it throughout the world, since it would otherwise



# PLANNING REPLACEMENTS



Annealing Covers	Steel Stacks
Bases—Welded	Weldments
Bins	Accumulator Tanks—High Pressure
Charging Boxes	Large Diameter Pipe & Mains
Elevated Tanks	Pots—Tin or Galvanizing
Pressure Vessels	Steel Plate Fabrication
Storage Tanks—oil-water-acid-propane-butane	

## *There is no substitute for experience*

Many outstanding steel mills are now using General American plate fabricated equipment which has rendered long and satisfactory service.

Much of this equipment was precision fabricated from drawings and specifications submitted by the customer. Some of this equipment was designed, fabricated and installed entirely by this organization.

Regardless of whether you want us to engineer and design the equipment, or you design the equipment yourself and have us fabricate it to your specifications, General American is equipped to do a good job.

You will be working with an organization which has the knowledge, experience and shop facilities to produce equipment for superior performance.

## **General American**

TRANSPORTATION CORPORATION  
process equipment • steel and alloy plate fabrication

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WORKS: Sharon, Pa.; East Chicago, Ind.



OFFICES: Chicago, Louisville, Cleveland,

Sharon, Orlando, St. Louis, Salt Lake City,

Pittsburgh, San Francisco, Washington, D. C.

# FORT PITT BRIDGE WORKS

## Engineers, Fabricators and Erectors of Riveted and Welded Structural Steel for

- Railroad and Highway Bridges
- Demountable Bridges
- Industrial Buildings
- Commercial Buildings
- Public Buildings
- Power Houses
- Engineers and Fabricators of Concrete Reinforcing Steel

## Engineers and Manufacturers of

- Combustion Systems for Industrial Furnaces

## Specialized Facilities for

- Pressing and Welding of Heavy Plate Sections

*Steel Permits Streamlining Construction  
with Safety, Endurance and Economy*



## FORT PITT BRIDGE WORKS

MEMBER AMERICAN INSTITUTE OF STEEL CONSTRUCTION  
General Offices, Pittsburgh, Pa. . . . Plant at Canonsburg, Pa.

### BRANCH OFFICES

NEW YORK, N. Y.  
CLEVELAND, OHIO  
COLUMBUS, OHIO

441 Lexington Avenue  
Bulkeley Building  
Huntington Bank Building

WASHINGTON, D. C.  
DETROIT, MICHIGAN  
PHILADELPHIA, PA.

Washington Building  
New Center Building  
Commercial Trust Building

be impossible to know whether supplies of it, however obtained, were being used for the manufacture of atomic bombs. And if the world is really moving into the atomic age, this would require an inspector in every industrial plant.

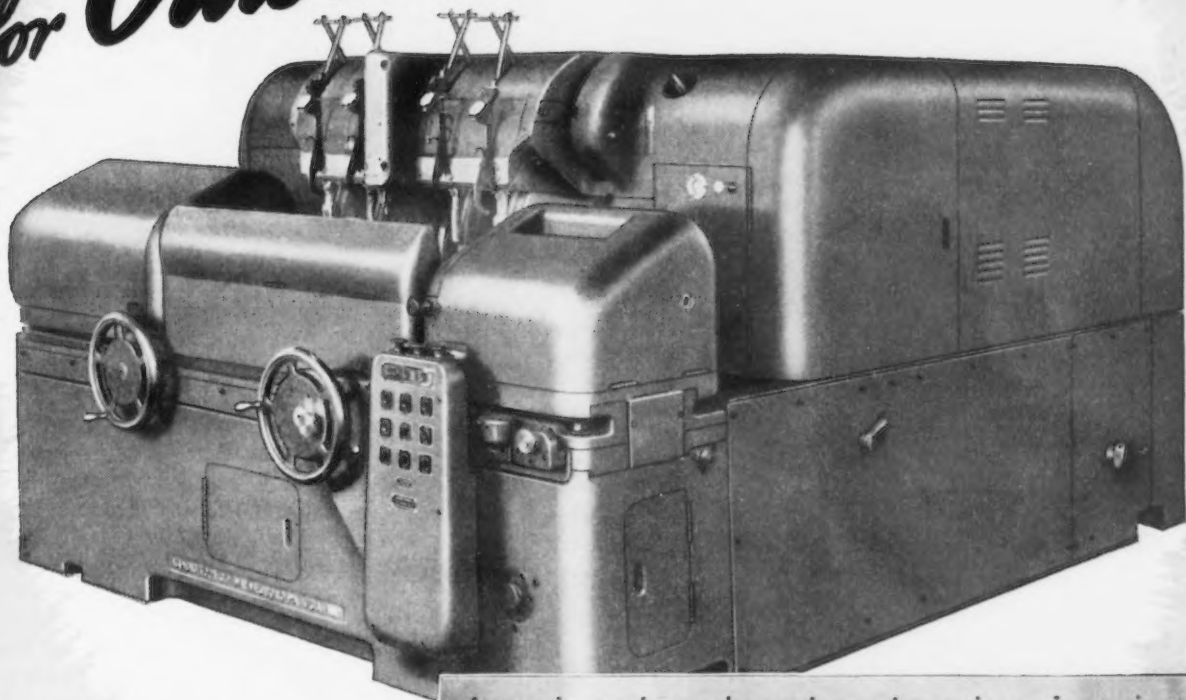
The problem, so conceived, is so gigantic that it would require, not only a world state to enforce the inspection, but the degrading of national states to the level of local authorities without either the will or the means to fight each other. The Lilienthal plan is a great improvement in practicability on this. It would still require the world authority to act as monopolist producer and controller, but it would no longer be necessary to abolish the national state. With denatured plutonium available, the objects of inspection are substantially reduced to two: Any unlicensed attempt to mine uranium, and any attempt to remove the denaturant. Both these should be fairly easily detectable, and neither, if detected, would be susceptible of any innocent explanation. The whole range of non-dangerous applications of atomic energy could proceed, uninspected and unhindered.

This, if it is established, is a great advance. The technicians have brought the problem down to technically manageable proportions. They have set the politicians a problem that the politicians ought to be able to solve.

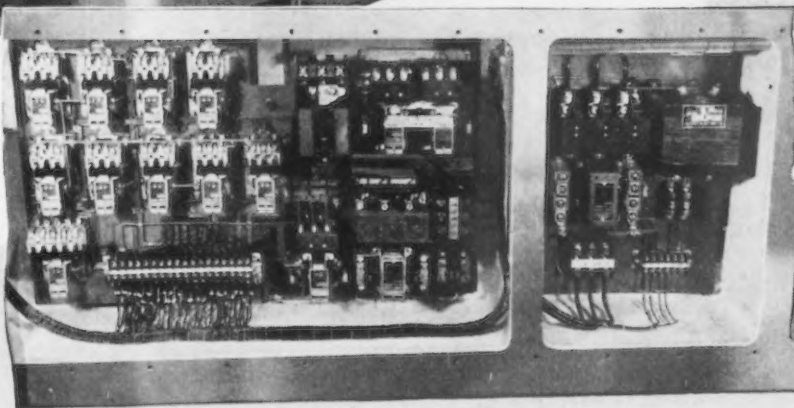
But on the political front, unfortunately, the evidence is not very encouraging. Both in Great Britain and in the United States, bills are before the legislatures providing for a national monopoly of all atomic activities. Nationalization may be only a step towards internationalization; but in the meantime it leaves the whole matter in the one posture that is obviously the most dangerous. In the international field, the United Nations Commission on Atomic Energy has yet to meet; but the prospect of setting up an international body to which the nations would entrust their secrets—let alone surrender their powers—is clearly still a remote one. The Russian attitude is one obvious obstacle in the way. But, even if it were removed, it evidently cannot be taken for granted that American public opinion would be prepared to surrender



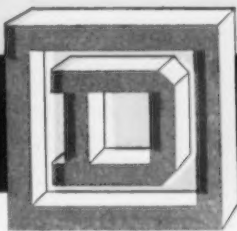
# Outstanding Control for Outstanding Machines



Built by LANDIS TOOL for the automotive industry, this 50,500 pound grinding machine provides the fastest known method of grinding crank shaft line bearings. Square D control (at right) puts this machine through its paces by "finger tip" operation.



You'll find SQUARE D CONTROL on machine tools of America's outstanding builders. They value the counsel of Square D Field Engineers and the sound engineering built into an unusually complete line of control units and accessories.



## SQUARE D COMPANY

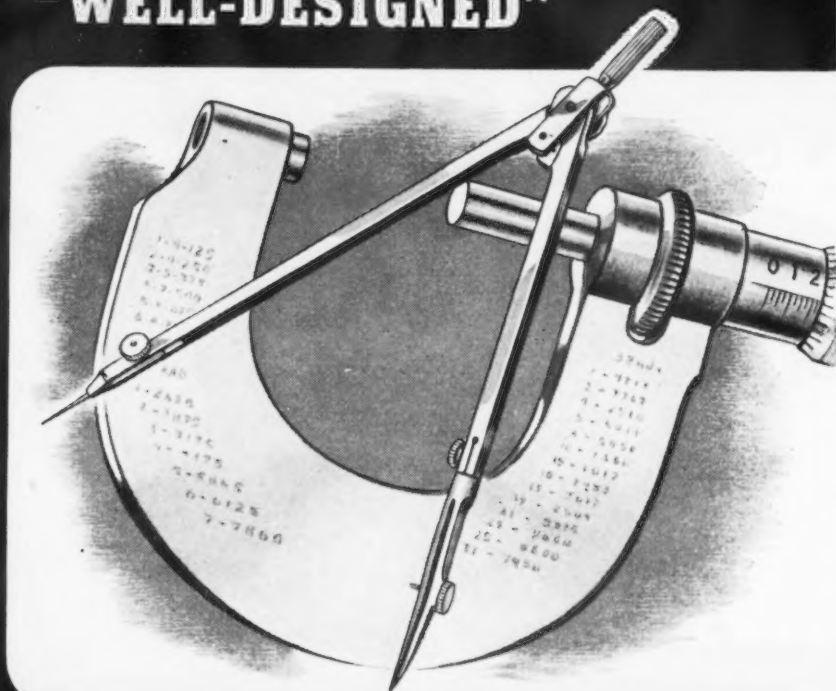
DETROIT

MILWAUKEE

LOS ANGELES

THE IRON AGE, May 16, 1946—135

**"WELL-DESIGNED"**



**"CAREFULLY CONSTRUCTED"**

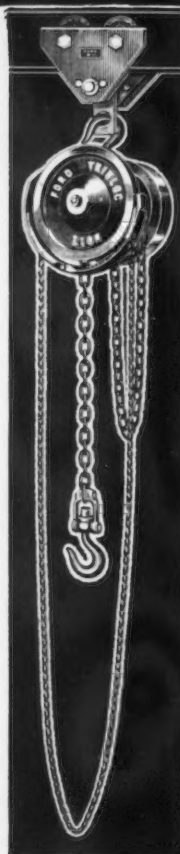
## are not enough for FORD TRIBLOCS

There is nothing "good enough" at the Ford Chain Block factory. —There never has been. From the drafting room to the drop-forged plant or the foundry — every person thinks — takes pride in his work — tries to make this machine just a little better than any preceding machine.

That is the reason why we can enumerate such features as:

- Fewer parts than any other hoist in its field
- Precision-made ball bearings
- Ball-seated oil ducts
- Drop-forged, heat-treated hook which gives visual warning of overload
- Automatic load-brake prevents slipping
- Hook assemblies permit rocking and swiveling
- Load chain is high-carbon, heat-treated steel

— See your nearby Ford distributor.



**ACCO**

York, Pa., Chicago, Denver, Los Angeles, Philadelphia, Portland, San Francisco, Bridgeport, Conn.



**FORD CHAIN BLOCK DIVISION  
AMERICAN CHAIN & CABLE**

*In Business for Your Safety*

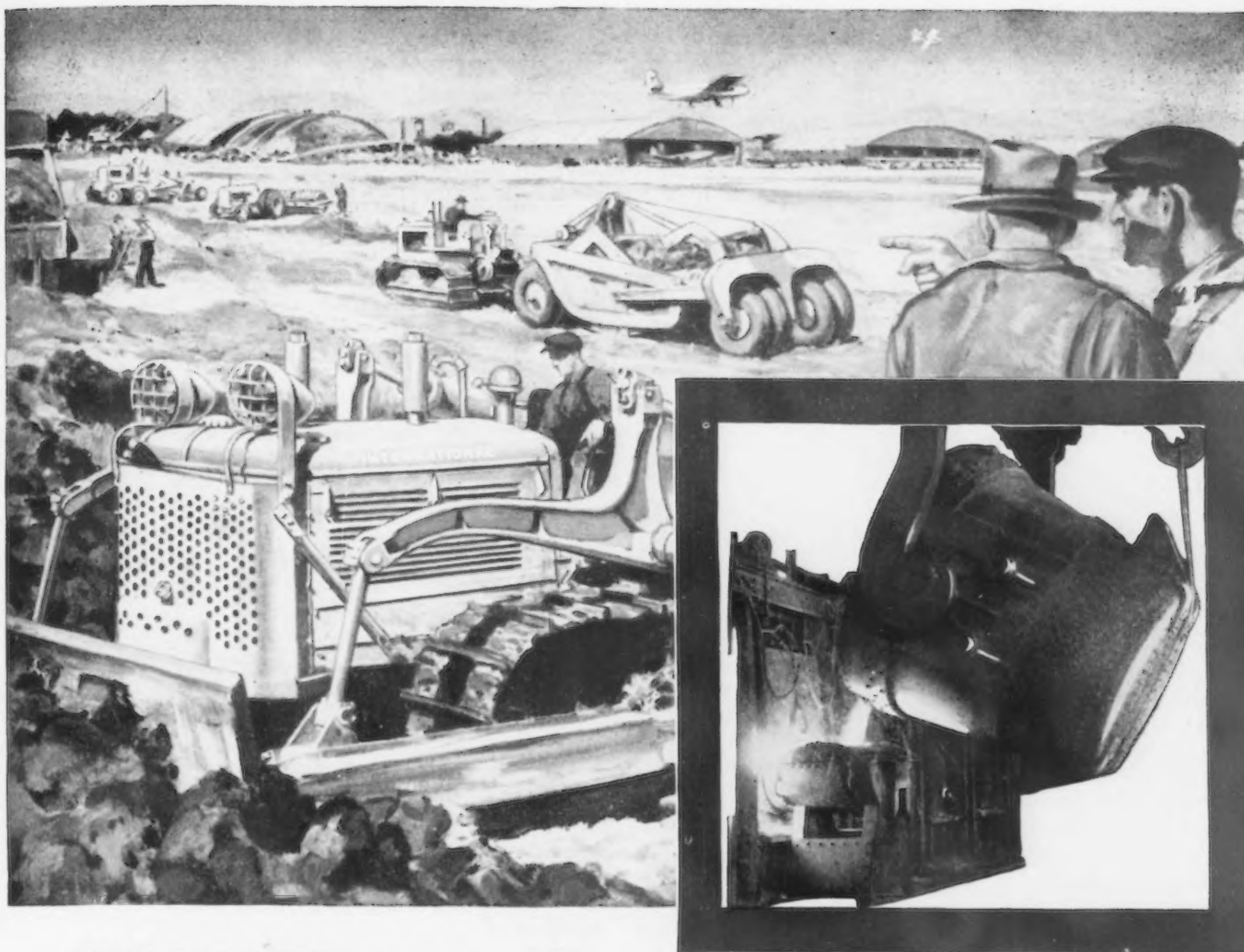
to the world what is now an American monopoly.

Here is a curious dilemma. Why is it that thinking men, all over the world, are unanimous in holding that the competitive national development of atomic power cannot be other than irremediably disastrous, and yet the same thinking men, acting through their governments, are singularly coy in canvassing an international solution? The answer lies perhaps in a verbal distinction that is not often enough made. "International" literally means "among the nations," and that is also, at present, its actual meaning.

To entrust atomic development to an international body—say to the Security Council — is in fact to share it among the nations, to give it, not to any world authority, but to the United States, the United Kingdom, the Soviet Union, France, China, Poland, the Netherlands, Australia, Brazil, Mexico and Egypt. And to do this would surely be far more dangerous than to keep the secrets in the possession of a single country whom nobody can seriously suspect of aggressive intentions. When the Lilienthal Report speaks of an international authority, it does not mean one which, like UNO, is literally international, but rather one that is non-national, or supranational, or extranational. It is right to hold that the only hope for the world lies in placing atomic energy in the trust of a body impartial between the nations. But the American and British Governments are also following a sound instinct in refusing to hand over their knowledge indiscriminately to other national governments under the banner of "internationalism."

When thus clarified, the problem does not become any easier. But it is mere self-deception to pretend that there is any escape from it. The Lilienthal Report lays down the technical requirement. The political requirement is that some means shall be discovered of creating a truly non-national body—not a merely international commission—with sufficient integrity to administer its atomic monopoly and sufficient authority to enforce it on the territory of any nation without reference to that nation's government. Of the discovery of such means there is no present sign; but it is necessary to go on insisting that this, and nothing less, is the requirement.





## POWER *made possible* by **ALLOY STEEL**

The mighty crawler tractors that carve airports and highways out of wastelands are actually mobile power plants. And these power units are made possible by alloy steel! Only alloy steels have the qualities of strength and resistance to wear necessary for the rugged existence of a crawler tractor and alloy steels permit the elimination of excess bulk and weight.

Many vital parts of these powerful monsters are built of Wisconsin Alloy Steels. These alloy

steels have proven their quality in thousands of applications. Better control, fewer rejections, finer steel, are more than slogans to Wisconsin Steelmen. They are the very foundation of Wisconsin steelmaking tradition.

Contact Wisconsin's sales and metallurgical staffs for the facts you need about alloy steel applications. You'll get the benefit of top-flight steelmaking "know-how," because the name "Wisconsin" means excellence in alloy steel.

### **WISCONSIN STEEL COMPANY**

(Affiliate of International Harvester Co.)

180 North Michigan Avenue

Chicago 1, Illinois

### **STEEL OF SUPERB QUALITY**

# **WISCONSIN** **ALLOY** **STEELS**

## Surplus Machine Tool Sales Increase Under Dealer-Agent Setup

Washington

• • • Appointment of dealer-agents has been a means of speeding up disposals of surplus machine tools, it is indicated by figures released by WAA covering the month of February.

Since inauguration of the plan, dealer-agent cumulative disposals amount to approximately \$10.6 million which represents roughly one-fourth of the total sales since the plan was put into operation. Cumulative sales through February amounted to 37,505 complete machine tools, having a reported cost of \$133 million, for a return of \$73 million.

Total disposals for February, however, showed less than 2 pct increase over January sales, reaching a total of \$20.6 million for the month. This leveling-off followed four months during which sales rose sharply, February disposals

nearly doubling those of October 1945.

At the same time, WAA figures registered a sharp drop in acquisitions by the agency, from \$110 million in January to \$78 million in February. As a result, the inventory of complete tools dropped 520 units during the month while inventory value (reported cost) increased 15 pct—indicating that the cheaper tools were being cleared and more costly machines acquired.

Of the total inventory of \$446 million (107,000 complete tools),

about 72 pct is concentrated in the Detroit, Chicago, Cleveland and New York areas, the regions which have made a majority of sales. Chicago has supplanted Detroit as the leading seller although the former's inventory is less than half the latter's.

## OPA to Raise Prices Of Farm Equipment

Chicago

• • • Higher farm equipment prices to offset recent wage increases in the industry appear certain, Alva W. Phelps, president, Oliver Corp., indicated recently after discussions with the Office of Price Administration.

Mr. Phelps previously had stated that Oliver was sustaining a loss of 23¢ per dollar of sales, and that the company would shut down its plants if no price relief were provided.

Following a conversation with an OPA official, he later stated that a general increase in farm equipment ceiling prices had been promised, and that Oliver was in line for additional increases.

The wage stabilization board has approved wage increases of 18¢ an hr for employees of Deere & Co. and International Harvester Co., bringing the industry in line with steel and automotive wage scales.

## New Officers Elected

Dayton

• • • Welding equipment and supply distributors attending the second annual convention of the National Welding Supply Assn. at Dayton, Apr. 29 and 30 elected L. O. Schneiderwind, Omaha, Neb., president; Ralph E. Chase, Benton, Ill., senior vice-president; and H. G. Weiler, Dayton, secretary-treasurer. Ten trustees for one and three year terms were also elected.

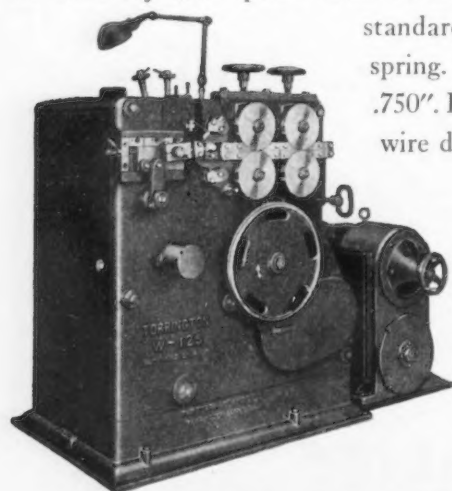
Sales of Machine Tools Through Dealer-Agents  
(Cumulative as of Feb. 28, in \$ thousand)

Region	Reported Cost	Sold For	Holdings
Chicago .....	2,756	1,162	73,000
Detroit .....	2,167	1,037	161,000
Cleveland .....	1,598	752	83,000
Boston .....	1,195	548	.....
Philadelphia .....	790	370	.....
New York .....	645	295	83,000
All Others .....	1,440	764	116,000
Totals .....	10,591	4,929	446,000

## ACCURATE, HIGH-SPEED SPRING PRODUCTION

With Torrington Spring Coilers

All fourteen models of Torrington Manufacturing spring coilers are noted for accuracy and speed. With torsion, or other available attachments,



standard models will make almost any useful spring. Wire diameters range from .003 to .750". For catalog or quotation, write stating wire diameter range required.

### W-125 SEGMENT TYPE SPRING COILING MACHINE

Wire Diameter Range — .080" to .207"  
Wire Length per Spring — 0" to 75"  
Coil Range (O. D.) — ⅜" to 3 ¼"

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MANUFACTURING COMPANY  
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Manufacturers of fabricated steel and stampings will find Jacksonville advantageously situated for serving rapidly growing postwar markets. Study these facts:

**LOCATION**—Southeastern corner of the United States, strategically located to serve economically the increasingly important industrial Southeast, interior markets, Gulf and Pacific coasts, South America and world ports.

**LABOR**—Ample supply of skilled and unskilled labor, largely native born, cooperative and easily taught. Many workers skilled in metal work due to shipbuilding, metal fabrication and other heavy war work.

**DISTRIBUTION FACILITIES**—A major Atlantic port and highway center, served by four trunkline railroads, and intra-coastal Barge Canal providing a sheltered waterway from New Jersey to Miami. Three major airlines, and numerous bus and truck lines.

**CLIMATE**—Ideal year-round climate permits great savings in plant construction, heating and maintenance, and guarantees more working days per year. Living is less costly and more pleasant because of equable year-round weather.

**MARKET**—Jacksonville's non-competitive distribution area embraces a population of 3,420,770 with an effective buying income of \$2,626,291,000. The local wholesale trade area includes a population of 1,194,891 with an effective buying income of \$1,045,792,000.

A specific industrial and market survey will be prepared at your request. Write us and outline your needs. Correspondence will be strictly confidential.

Dept. A., Industrial Division,  
Chamber of Commerce,



## NEWS OF INDUSTRY

### NYC President Stresses Rail Modernization In Competition Race

Pittsburgh

••• Gustav Metzman, president, New York Central System, told some 1400 members and guests of the Traffic Club of Pittsburgh at its recent annual dinner that American railroads have speeded up train schedules, both passenger and freight, and placed orders for more than 2000 passenger cars of the latest design as well as 42,000



Mr. Metzman

freight cars. He also said that the high speed freight car for fast merchandise trains is becoming a distinct type. Further, considerable study is being given locomotives.

"Typical of the improved power on American railroads are PRR's high-speed, four-cylinder steam locomotive, its geared turbine, the New York Central's new Niagara type dual purpose freight or passenger locomotive, and impressive new designs on other railroads," Mr. Metzman pointed out. "The search for a practical gas turbine locomotive that burns coal as its basic fuel is being vigorously pursued through the Locomotive Development Committee, a cooperative enterprise sponsored by six railroads and three coal companies, and the coal burning steam turbo electric, again a joint research project, is a further example of long partnership between the railroads and the coal industry.

Mr. Metzman said that Oct. 1, 1946, will see the end of land grant deductions on all government traffic, the result of the Boren bill which was passed by Congress and signed by the President last December. The passage of this bill is recognition of the fact that "railroads have repaid many times over in reduced rates on government traffic the early grants of land in aid of railroad construction," Mr. Metzman pointed out. When granted, the lands were worth some \$130 millions, but the value of land grant rate reductions will



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furnaces.

With a Type N, 10 KW, 10 lb. Laboratory Detroit Rocking Electric Furnace you can develop new alloys and melting techniques necessary to producing castings of desired characteristics in production. Rugged and compact, this efficient little pilot plant is engineered with all the proven Detroit Electric Furnace advantages, including the well known rocking action. When melting practices are established they can be duplicated in larger units under most desirable working conditions. Our engineers will be glad to study your melting requirements and advise how Detroit Rocking Electric Furnaces can speed quality metal melting in your plant.

**DETROIT** ELECTRIC FURNACE DIVISION  
KUHLMAN ELECTRIC COMPANY • BAY CITY, MICHIGAN

reach \$1,270,000,000 by the time the repeal takes effect.

"America's No. 1 transportation problem," Mr. Metzman claimed, "is the need for a sound policy governing the investment of tax money in transportation facilities. Government investment in highways, waterways, airports, and airways exceeds private investment in railways. However, private investment in railways is taxable and must be self-supporting."

"This railway investment cannot live alongside of government investment in competing facilities unless government investment is also made self-supporting—unless the taxpayer is given a chance to get his money back. This means that people who use publicly owned transportation facilities would pay their way—through fair user charges and through paying a fair share of the taxes for the general support of the government," he said.

"The Transportation Act of 1940," Mr. Metzman pointed out, "laid a solid foundation for sound national policy. That Act provided for fair and impartial regulation of all modes of transportation, so administered as to preserve the inherent advantages of each; to promote safe, adequate, economical and efficient service; and foster sound economic conditions in transportation and among the several carriers—all to the end of developing, coordinating, and preserving a national transportation system by water, highway and rail adequate to meet the needs of commerce of the United States." This program was forestalled by the war, but the foundation is there, he said, and it is time that Congress adopted measures necessary to insure application of the 1940 Act to the whole field of transportation.

### **National Steel Net Down**

*Pittsburgh*

• • • National Steel Corp. reports net income, after all charges, for the quarter ended Mar. 31, 1946, of \$2,083,356, equal to 94¢ per share on capital shares. This compares with earnings in the first quarter of 1945 of \$3,429,988, equal to \$1.55 per share.

All expenses resulting from the steel strike in the first quarter of 1946 have been charged against cost of operations in the quarter.



## Reports Quarter Of Population Lives In Iron and Steel Towns

New York

••• One of every four persons in the United States lives in a community where a plant that is considered part of the iron and steel industry is located, the American Iron & Steel Institute said recently.

This fact is revealed by study of population statistics in relation to the latest Directory of Iron and Steel Works, listing 404 iron and steel plants and rolling mills of the industry, situated in 253 towns and cities over the nation.

The study shows that the states with the heaviest populations—New York, Pennsylvania, Illinois and Ohio—rank with Maryland as having the highest percentages of their populations in iron and steel-making towns or cities.

The five leading states and 24 other states where the industry's facilities are located, had approximately 82 pct of the population of the United States at the time of the 1940 census.

In New York, the most heavily populated state, 63 pct of the persons live in communities where blast furnaces, steel furnaces, rolling mills or other production facilities are located. This figure, equivalent to one person of every 1.6 residents of the state, results from the inclusion of the population of the five boroughs comprising the City of New York. Two rolling mill plants are situated within the limits of the largest city.

Exclusive of the City of New York, only one person of every twelve in the Empire State resides in a community having an iron or steel plant. The exclusion would also alter the nationwide figure with the result that of the population of the United States only 20 pct, or one in five persons, could be said to live in a community having an iron or steel plant.

In Illinois, where approximately 9 pct of the total annual steel capacity is located, one person of every two resides in cities or towns having production facilities.

Maryland, with plants in Baltimore, Sparrows Point and Cumberland, has 49.7 pct of its population in communities where iron and



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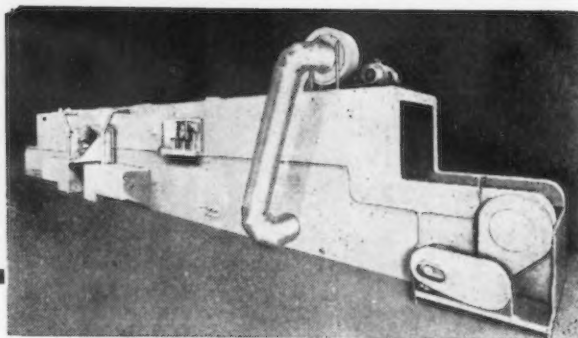
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**WASH . . . RINSE AND DRY IN CONTINUOUS OPERATION**

\*Equipped with patented  
RANSOHOFF PACKLESS  
PUMP, also UNI-DRAIN  
which combines all drains  
into one common drain  
leading to sewer.

THAT'S a lot of casting . . . 1700 pounds . . . and a big job for any cleaning machine . . . but this RANSOHOFF MACHINE with its extra heavy conveyor chains handles it as easily as other Ranshoff installations clean tiny metal parts.

It's all the way RANSOHOFF CLEANING MACHINES are designed, engineered and built for the purpose you require. WRITE OUR ENGINEERS.

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## NEWS OF INDUSTRY

steel are made. Maryland ranks tenth in steel capacity.

In Pennsylvania, the state with the greatest iron and steel capacity, one of every 2.2 persons lives in a community where a blast furnace, steel plant, rolling mill or other production facility is situated. Pennsylvania, the second most populous state, has approximately 31 pct of the nation's total annual capacity for the production of steel.

Slightly more than 38 pct of the persons in Ohio reside in communities having iron or steel plants. Ohio is the second largest steel state with approximately 20 pct of the national capacity.

With the inclusion of the Los Angeles and San Francisco districts, approximately 36 pct of California's population lives in communities having iron or steel production facilities.

In other states the percentages of population in iron and steel communities are as follows: Massachusetts, 26.8 pct; Rhode Island, 10.7 pct; Connecticut, 35.4 pct; New Jersey, 24.8 pct; Delaware, 1.4 pct; Virginia, 14.4 pct; West Virginia, 10.4 pct; Kentucky, 13.3 pct; Tennessee, 4.0 pct; Georgia, 9.7 pct; Alabama, 13.2 pct; Texas, 9.0 pct; Wisconsin, 21.8 pct; Indiana, 27.9 pct; Michigan, 33.4 pct; Minnesota, 3.6 pct; Missouri, 32.1 pct; Iowa, 2.6 pct; Oklahoma, 6.1 pct; Colorado, 4.6 pct; Utah, 2.7 pct; Washington, 21.2 pct; Oregon, 28.0 pct.

### Recommends Five Major Steps to Strengthen Present Tax Structure

New York

• • • Five major steps to improve and strengthen the present national tax structure are recommended in a research report issued recently by the Committee for Economic Development. Harold M. Groves, professor of economics in the University of Wisconsin and author of the report, "Postwar Taxation and Economic Progress," contends that these changes would provide a rational system of long-run postwar taxation and would tend to promote high standards of production, employment and living.

A preliminary research report on postwar taxation was prepared for CED by Professor Groves in



June 1944. Paul G. Hoffman, CED chairman, in announcing completion of this final study said its recommendations are those of the author and are not censored by CED's board of trustees or its research committee. His five major recommendations are:

(1) Personal Income Tax. A progressive personal income tax with a broad base and an adequate standard rate should be the main source of revenue for postwar governments; there should be no loopholes in the tax and it should be administered strongly. Tax exemption privileges of all government securities should be eliminated. All capital gains should be taxed in full while capital losses should be fully deductible. There should be some form of averaging incomes over several years in determining tax liability.

(2) Corporate Income Tax. This should be integrated with the personal income tax so as to eliminate present double levies on corporation profits distributed as dividends. Corporate profits should be taxed at a low bracket personal income tax rate. Taxes on corporate profits would be considered advance payments of taxes for stockholders who become fully liable when they receive dividends. New, small enterprises should not be taxed on their undistributed earnings during their first 5 yr. Risk-taking investment should be encouraged by permitting a carryover of business losses, probably by a 6-yr averaging provision.

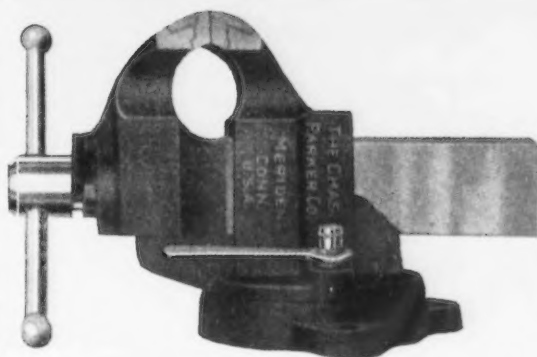
(3) Consumption Taxes. Consumption taxes tend to discourage increased markets and should be confined mainly to liquor, tobacco and possibly gasoline. Tariffs share the same disadvantages as other consumption taxes with respect to limiting markets.

(4) Estate and Gift Taxation. Numerous avoidance devices have weakened estate and gift taxes. The report urges plugging of these loopholes.

(5) State and Local Taxes. Since states and municipalities will need wider sources of revenue after reconversion, supplements to centrally levied taxes are proposed under which central units would collect taxes at cost for the local units.

Professor Groves recommends a moderate reduction in personal income tax schedules at all levels as compared with the 1944 scale. Re-

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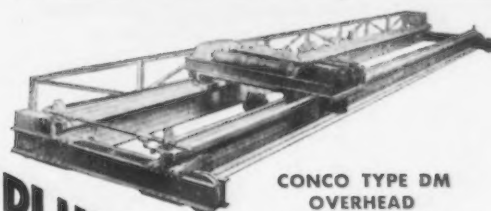
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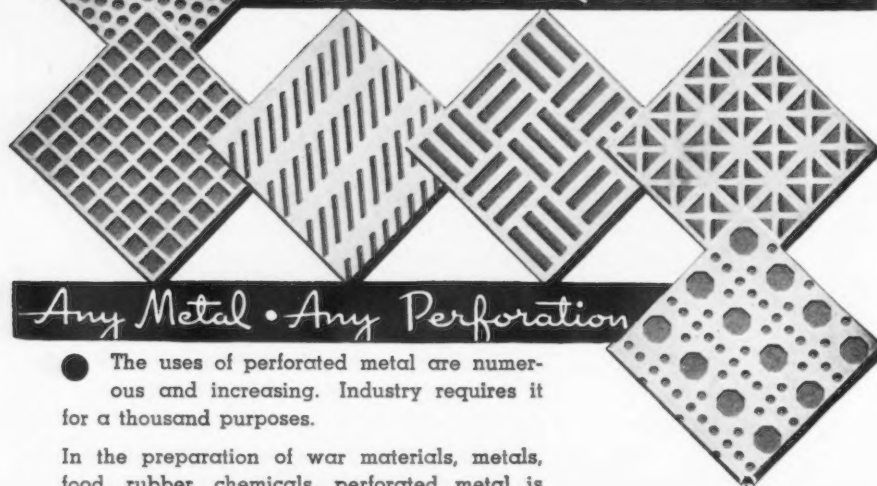


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And, remember—any old size won't do.

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### NEWS OF INDUSTRY

tention of personal exemptions at the present levels, as he proposes, will continue to exempt, under his scale, about one third of the nation's income recipients from direct personal income taxes. The reduction suggested for the upper middle brackets, those from \$20,000 to \$100,000, is somewhat greater than for the rest of the scale as the author contends this type of income is an important recruiting ground for equity capital.

He asserts that full inclusion of capital gains and losses will more than offset in the highest brackets, the effect of lower surtax rates. If the national income should be \$140 billion, about \$57 billion would be subject to tax as compared with only \$29 billion, with the same national income, under 1939 exemptions, the author declares.

### British Empire Gets 400,000 Tons From German Merchant Navy

London

• • • Britain will receive the largest share of the two thirds of the German merchant fleet which has already been handed over to the United States and Britain to be divided among 15 allied countries, according to figures issued by the Inter-allied Reparations Agency in Brussels. The other third, which has been allocated to the Soviet Union, will be shared with Poland.

On the basis of the British Foreign Office announcement that the total amount of German merchant shipping to be divided among the allies would be about 1,546,480 net tons, valued at \$80,000,000 according to 1938 building prices, Britain's share will be about 408,800 tons, worth over \$24,000,000.

The percentage of shipping allotted to each of the 15 countries, which has been based on the tonnage lost by them during the war, is as follows:

Great Britain and the Colonies: 46.94 pct (in reparation for 12,174,400 net tons lost).  
United States: 17.82 pct (for 4,714,080 tons lost).  
Australia: 0.19 pct (for 49,280 tons).  
Belgium: 1.33 pct (for 350,560 tons).  
Canada: 1.42 pct (for 376,320 tons).  
Denmark: 2.19 pct (for 580,160 tons).  
Egypt: 0.23 pct (for 61,600 tons).  
France: 7.68 pct (for 2,031,680 tons).  
Greece: 4.99 pct (for 1,319,360 tons).  
India: 0.24 pct (for 62,720 tons).  
New Zealand: 0.14 pct (for 35,840 tons).  
Norway: 10.14 pct (for 2,680,160 tons).  
Holland: 6.59 pct (for 1,741,600 tons).  
Yugoslavia: 0.86 pct (for 226,240 tons).  
South Africa: 0.14 pct (for 36,960 tons).



## WAA Declares Six Big Army Plants Surplus

Washington

••• Containing large acreages which are now, or shortly will be, classified as industrial areas and will be allotted for industrial or manufacturing purposes, six Army ordnance plants have been declared surplus and are being offered for sale or lease by the War Assets Administration. The land is to include buildings and improvements necessary for production operations of purchasers or lessees.

The ordnance plants are:

Arkansas Ordnance Plant (Ford, Bacon and Davis, Inc.) Jacksonville, Ark., approximately 7341 acres.

Southwestern Proving Ground, four miles north of Hope, Ark., approximately 49,885 acres.

Mississippi Ordnance, 23 miles northwest of Jackson, Miss., total site of 9135 acres of which 6663 acres are government owned.

Gulf Ordnance Plant (Procter & Gamble Co.), Prairie, Miss., nine miles southwest of Aberdeen, approximately 6521 acres.

Oklahoma Ordnance Works (E. I. DuPont de Nemours, Inc.), Choctaw, Okla., 46 miles east of Tulsa, approximately 15,845 acres.

West Virginia Ordnance Works (General Chemical Co.), Point Pleasant, W. Va., approximately 8329 acres.

The Revere Copper & Brass Corp.'s plant, Chicago, also has been declared surplus and is being offered for sale or lease by WAA.

## Business Machines Up 12 Pct

Washington

••• Manufacturers of business machines, including typewriters, may increase their October 1941 selling prices 12 pct, effective May 8, OPA has announced. The business machines affected besides typewriters are accounting, adding, addressing, bookkeeping, calculating, dictating, duplicating, fare registering, recording, stenographic, cash registers and devices in which the basic mechanism of any machine covered by this action is a component part. Most sales of these machines, except portable typewriters, are made directly by the manufacturers to users.



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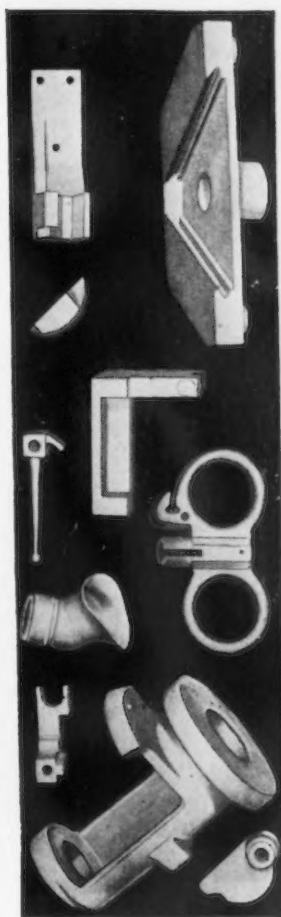
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## An OPEN LETTER on

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If you are now producing small metal parts by conventional methods of casting, forging or machining, you may be able to realize substantial savings in production costs by using precision casting methods.

Developed to meet wartime production demands, this new process may be applicable to your products particularly if machining costs are high or runs are short with high costs.

Precision casting is being used today to produce a wide range of parts in ferrous and non ferrous metals including high temperature alloys and varying in size from a fraction of an ounce to several pounds.

Compared to other industrial equipment, the cost of a complete precision casting plant remains surprisingly low.

As a dealer in precision casting equipment and supplies we offer detailed information to set up and operate a precision casting plant for your production.

Descriptive circulars of equipment and price lists of supplies furnished on request.

## ALEXANDER SAUNDERS & CO.

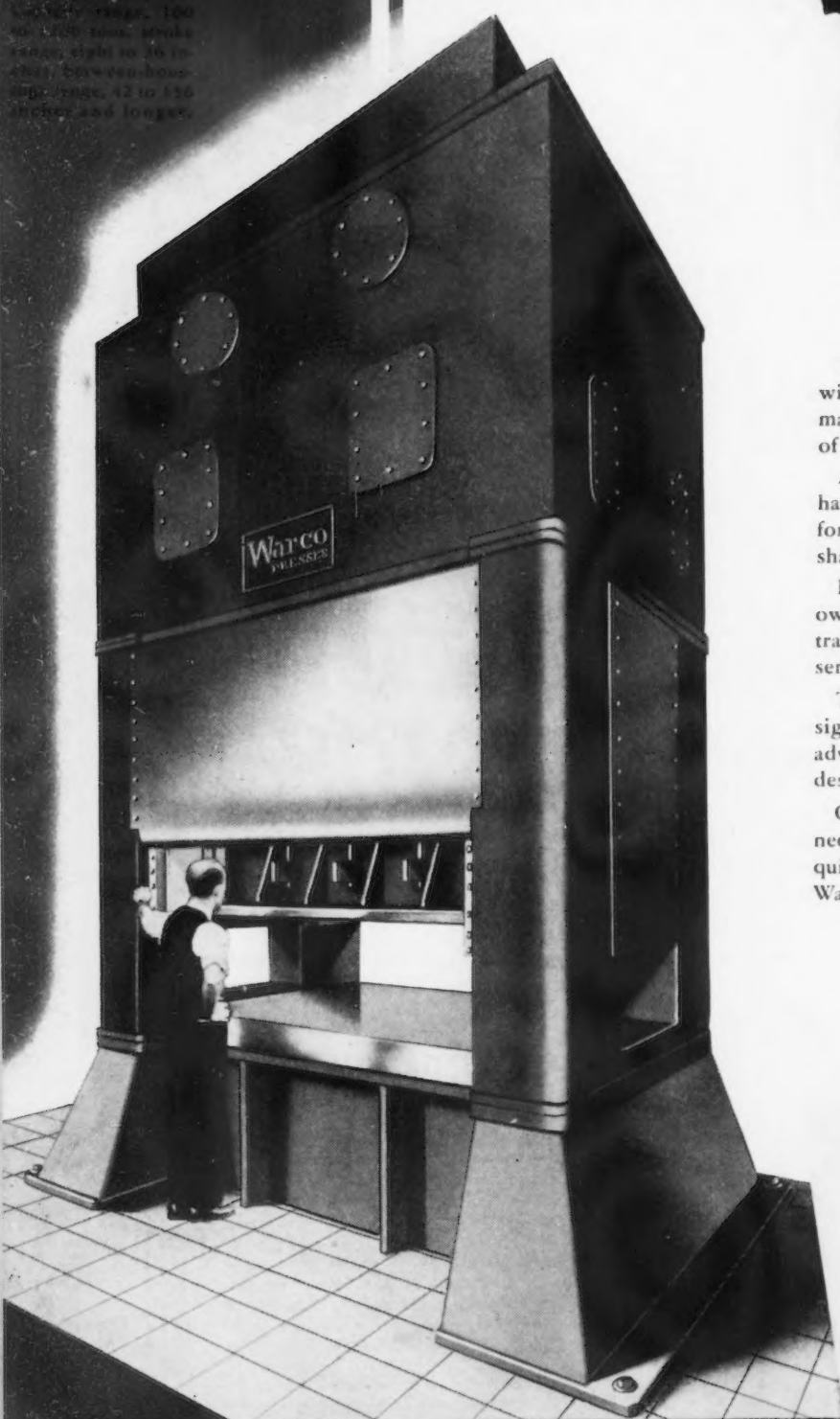
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STRAIGHT-SIDE  
HYDRAULIC PRESS  
Capacity range, 100  
to 1200 tons. Stroke  
range, eight to 36 in-  
ches. Between-house-  
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inches and longer.



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If you have been fortunate enough to receive a press within the last nine months, chances are that it was made entirely or in part by Warco's experienced staff of press engineers and craftsmen.

A portion of our tremendous engineering and production facilities have been and are now being utilized building presses and press parts for a group of companies which have in the past handled the largest share of the nation's press business.

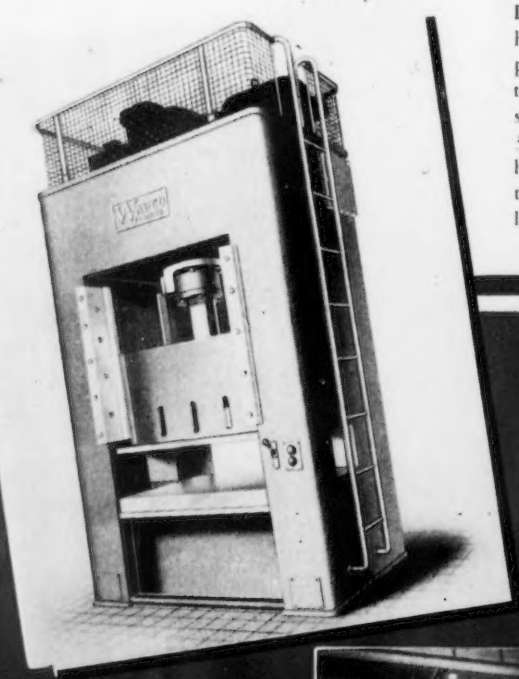
In introducing the new line of all-steel welded presses under our own trade name, "Warco", we are making available directly to the trade the know-how, experience and facilities that have enabled us to serve other press builders so eminently.

The "Warco" line represents the finest in press construction—designed by one of the country's leading press engineers—embodying advantages based on what press users themselves have told us they desire most in such equipment.

Our organization is prepared to render a complete service for engineering and building a wide range of models to meet your specific requirements. We invite you to avail yourself of the many benefits which Warco offers its customers. For full details, get in touch with us today.

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Left, straight-side hydraulic press, capacity range 100 tons to 1200 tons. Stroke range 10 to 36 inches. Between housings range, 42 to 156 inches and longer.



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The series of photos at the bottom of the page shows part of these facilities which enable Warco to produce the finest in all-steel welded presses and to render prompt satisfactory service to customers.

